

SEARCH REQUEST FORM

111584

Requestor's Name: LA VILLA Serial Number: 09/830,032
Date: 1/7/04 Phone: 2-1539 Art Unit: 1775

Search Topic:

Please write a detailed statement of search topic. Describe specifically as possible the subject matter to be searched. Define any terms that may have a special meaning. Give examples or relevant citations, authors keywords, etc., if known. For sequences, please attach a copy of the sequence. You may include a copy of the broadest and/or most relevant claim(s).

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Search Site

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☐ Pre-S

Type of Search

☐ N.A. Sequence
☐ A.A. Sequence
☒ Structure
☐ Bibliographic

Vendors

☐ IG Suite
☒ STN
☐ Dialog
☐ APS
☐ Geninfo
☐ SDC
☐ DARC/Questel
☐ Other



STIC Search Report

Biotech-Chem Library

STIC Database Tracking Number: 111584

TO: Michael Lavilla
Location: REM 5e79
Wednesday, January 07, 2004
Art Unit: 1775
Phone: 272-1539
Serial Number: 09 / 830032

From: Jan Delaval
Location: Biotech-Chem Library
Remsen Building – 1A51
Phone: 571-272-2504

jan.delaval@uspto.gov

Search Notes

10/21/99

=> fil reg

FILE 'REGISTRY' ENTERED AT 15:23:33 ON 07 JAN 2004
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STRUCTURE FILE UPDATES: 5 JAN 2004 HIGHEST RN 634558-38-6
 DICTIONARY FILE UPDATES: 5 JAN 2004 HIGHEST RN 634558-38-6

TSCA INFORMATION NOW CURRENT THROUGH JULY 14, 2003

Please note that search-term pricing does apply when
 conducting SmartSELECT searches.

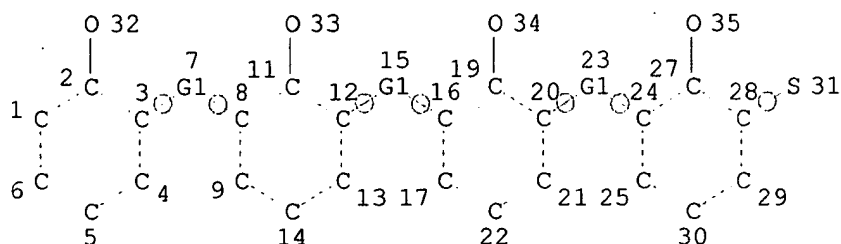
Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. For more
 information enter HELP PROP at an arrow prompt in the file or refer
 to the file summary sheet on the web at:

<http://www.cas.org/ONLINE/DBSS/registryss.html>

=> d sta que 17

L5 STR



REP G1=(1-7) S

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 32

STEREO ATTRIBUTES: NONE

L7 397 SEA FILE=REGISTRY SSS FUL L5

100.0% PROCESSED 459 ITERATIONS
 SEARCH TIME: 00.00.01

397 ANSWERS

=> d his

(FILE 'HOME' ENTERED AT 14:59:05 ON 07 JAN 2004)
 SET COST OFF

FILE 'HCAPLUS' ENTERED AT 14:59:13 ON 07 JAN 2004
 E WO99-JP5819/AP, PRN

L1 1 S E3, E4

L2 1 S (JP99-144750 OR JP98-318333)/AP, PRN

L3 1 S L1,L2
SEL RN

FILE 'REGISTRY' ENTERED AT 15:00:37 ON 07 JAN 2004

L4 22 S E1-E22
L5 STR
L6 18 S L5
L7 397 S L5 FUL
SAV L7 LAVILLA830/A

FILE 'HCAOLD' ENTERED AT 15:04:34 ON 07 JAN 2004

L8 0 S L7

FILE 'HCAPLUS' ENTERED AT 15:04:40 ON 07 JAN 2004

L9 172 S L7
E ODO J/AU
L10 52 S E3-E5
E KAWAHARA N/AU
L11 23 S E3,E4
E KAWAHARA NOBUKO/AU
L12 2 S E3
E AKASHI K/AU
L13 47 S E3
E AKASHI KOI/AU
L14 75 S E2,E4,E5
E MIYANO S/AU
L15 14 S E3
E MIYANO SOTARO/AU
L16 204 S E3,E4
E IKI N/AU
L17 82 S E3,E6,E8
E MOROHASHI N/AU
L18 34 S E3,E8
E TAKEYA H/AU
L19 142 S E3,E5,E6
E TAKEYA K/AU
L20 45 S E3,E11
E MIYANARI S/AU
L21 38 S E5
E KUMAGAI H/AU
L22 224 S E3,E4
E KUMAGAI HITOSHI/AU
L23 142 S E3
E COSMO/PA,CS
L24 1301 S E3,E4
L25 79 S L9 AND L10-L24
L26 0 S L9 AND (JUNICHI ? OR NOBUKO ? OR KOICHI ? OR SOTARO ? OR NOB
L27 32 S L25 AND ?COMPLEX?
L28 8 S L25 AND (H2O2 OR HYDROGEN PEROXIDE)

FILE 'REGISTRY' ENTERED AT 15:10:05 ON 07 JAN 2004

L29 1 S 7722-84-1

FILE 'HCAPLUS' ENTERED AT 15:10:44 ON 07 JAN 2004

L30 5 S L29 AND L25
L31 8 S L30,L28
L32 5 S L31 AND L27
L33 3 S L31 NOT L32
SEL DN AN 3
L34 1 S L33 AND E1-E3
L35 2 S L3,L34
L36 4 S L32 NOT L33,L35
L37 6 S L35,L36 AND L1-L3,L9-L28,L30-L36

L38 5 S L9 AND L29
L39 9 S L9 AND (H2O2 OR HYDROGEN PEROXIDE)
L40 1 S L38,L39 NOT L28
L41 7 S L37,L40
L42 67 S L9 AND ?COMPLEX?
L43 67 S L9 AND ?METAL?
L44 36 S L42 AND L43
L45 45 S L9 AND (PY<=1999 OR PRY<=1999 OR AY<-1999)
L46 7 S L45 AND L44
L47 13 S L41,L46
L48 24 S L45 AND P/DT
L49 20 S L48 NOT L47
SEL RN L47

FILE 'REGISTRY' ENTERED AT 15:20:22 ON 07 JAN 2004

L50 131 S E4-E134
L51 25 S L50 AND L7
L52 106 S L50 NOT L51
L53 58 S L52 AND 1/ELC.SUB
L54 54 S L53 NOT (S OR O OR BR)/ELS

FILE 'HCAPLUS' ENTERED AT 15:22:36 ON 07 JAN 2004

L55 43 S L54 AND L9
L56 10 S L55 AND L45
L57 9 S L56 AND L42,L43
L58 16 S L47,L56,L57

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=> fil hcaplus

FILE 'HCAPLUS' ENTERED AT 15:23:41 ON 07 JAN 2004

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FILE COVERS 1907 - 7 Jan 2004 VOL 140 ISS 2

FILE LAST UPDATED: 6 Jan 2004 (20040106/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> d 158 all hitstr tot

L58 ANSWER 1 OF 16 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2002:305532 HCAPLUS
DN 136:331190
ED Entered STN: 23 Apr 2002
TI Cyclic phenol sulfide-metal **complex** catalysts, their compositions, and method for degradation of **hydrogen peroxide** by using them
IN Odo, Junichi; Yamaguchi, Hanae; Takeya, Haruhiko;

Miyanari, Setsuko

PA Cosmo Sogo Kenkyusho K. K., Japan; Cosmo Oil Co., Ltd.

SO Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM B01J031-22

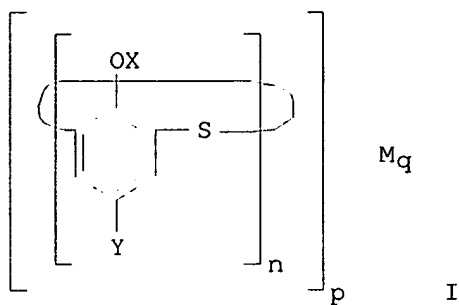
ICS B01J032-00

CC 67-1 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)

Section cross-reference(s): 25

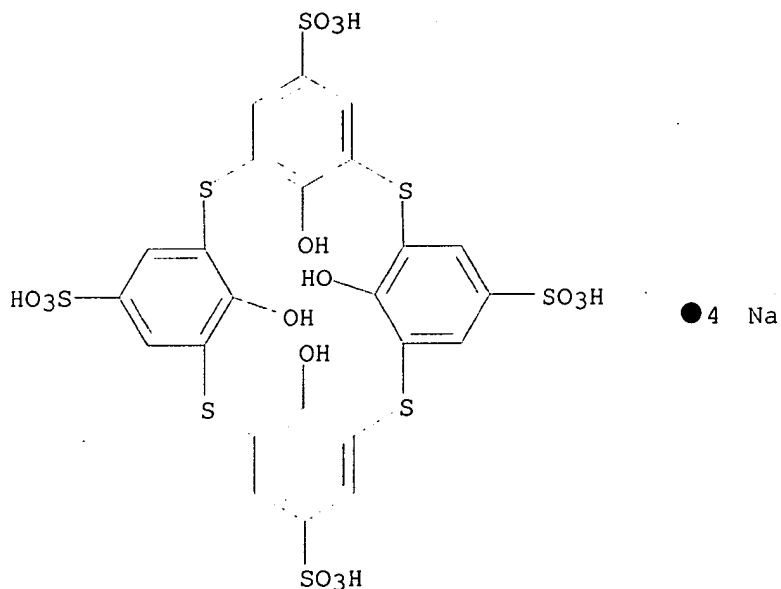
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002119863	A2	20020423	JP 2000-312711	20001012
PRAI	JP 2000-312711		20001012		
OS	MARPAT 136:331190				
GI					



- AB The catalysts are shown as I [X = H, hydrocarbyl, acyl, carboxyalkyl, carbamoylalkyl; Y = H, (halogenated) hydrocarbyl, halo, acyl, OH, carboxyl, amide, amino, nitro, cyano, (chloro)sulfonic acid group, alkoxysulfonyloxy, sulfonic acid salt; n = 4-8; M = transition metal, Group IIB metal; p, q ≥ 1]. The compns. containing I, supported on solid supports, show good H2O2 degradation properties.
- ST cyclic phenol sulfide metal **complex** catalyst; **hydrogen peroxide** degradn catalyst hydroxy polythiophenylene; ion exchanger support degradn catalyst
- IT Decomposition catalysts
(cyclic phenol sulfide-metal **complex** catalysts for H2O2 degradation)
- IT 211561-04-5DP, transition and Group IIB metal **complexes**
RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(anionic exchanger-supported; cyclic phenol sulfide-metal **complex** catalysts for H2O2 degradation)
- IT 138264-17-2, DEAE Cellulofine A 500
RL: CAT (Catalyst use); USES (Uses)
(catalyst support; cyclic phenol sulfide-metal **complex** catalysts for H2O2 degradation)
- IT 7439-89-6DP, Iron, **complexes** with thiacalix[4]arene derivs.
7439-96-5DP, Manganese, **complexes** with thiacalix[4]arene derivs.
7440-02-0DP, Nickel, **complexes** with thiacalix[4]arene derivs.
7440-48-4DP, Cobalt, **complexes** with thiacalix[4]arene derivs.
7440-50-8DP, Copper, **complexes** with thiacalix[4]arene derivs.
7440-66-6DP, Zinc, **complexes** with thiacalix[4]arene derivs.
RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(cyclic phenol sulfide-metal **complex** catalysts for

- H2O2 degradation)
- IT 7722-84-1, **Hydrogen peroxide**, reactions
 RL: POL (Pollutant); RCT (Reactant); REM (Removal or disposal); OCCU (Occurrence); PROC (Process); RACT (Reactant or reagent)
 (cyclic phenol sulfide-metal **complex** catalysts for H2O2 degradation)
- IT 182496-55-5P
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
 (for catalyst preparation; cyclic phenol sulfide-metal **complex** catalysts for H2O2 degradation)
- IT 98-54-4, 4-tert-Butylphenol 7704-34-9, Sulfur, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (for catalyst preparation; cyclic phenol sulfide-metal **complex** catalysts for H2O2 degradation)
- IT 211561-04-5DP, transition and Group IIB metal **complexes**
 RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
 (anionic exchanger-supported; cyclic phenol sulfide-metal **complex** catalysts for H2O2 degradation)
- RN 211561-04-5 HCAPLUS
 CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosal(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-5,11,17,23-tetrasulfonic acid, 25,26,27,28-tetrahydroxy-, tetrasodium salt (9CI) (CA INDEX NAME).



- IT 7722-84-1, **Hydrogen peroxide**, reactions
 RL: POL (Pollutant); RCT (Reactant); REM (Removal or disposal); OCCU (Occurrence); PROC (Process); RACT (Reactant or reagent)
 (cyclic phenol sulfide-metal **complex** catalysts for H2O2 degradation)
- RN 7722-84-1 HCAPLUS
 CN Hydrogen peroxide (H2O2) (9CI) (CA INDEX NAME)

HO-OH

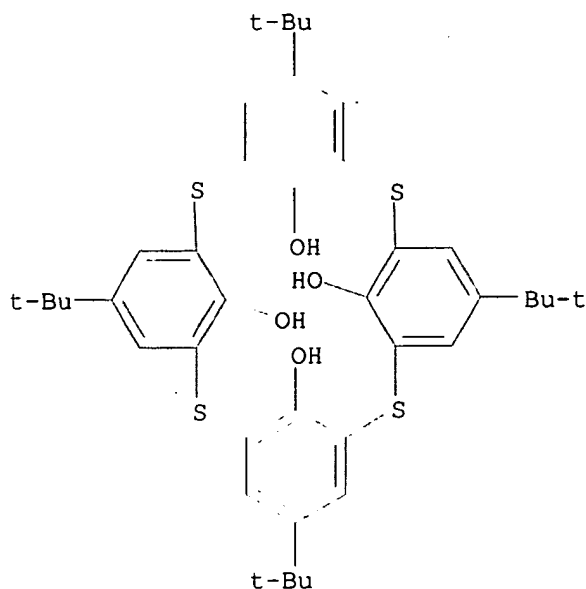
- IT 182496-55-5P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(for catalyst preparation; cyclic phenol sulfide-metal complex catalysts for H₂O₂ degradation)

RN 182496-55-5 HCAPLUS

CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosal(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



L58 ANSWER 2 OF 16 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2001:676876 HCAPLUS

DN 135:233670

ED Entered STN: 14 Sep 2001

TI Fluorescent material of cyclic phenol sulfide associated with metal and composition thereof

IN Miyano, Sotaro; Iki, Nobuhiko; Takeya, Haruhiko; Miyanari, Setsuko; Kumagai, Hitoshi

PA Cosmo Oil Co., Ltd., Japan

SO PCT Int. Appl., 22 pp.

CODEN: PIXXD2

DT Patent

LA Japanese

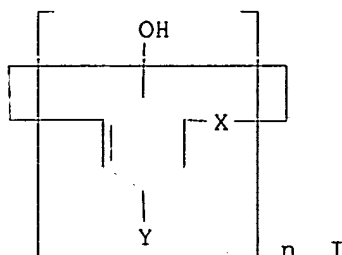
IC ICM C09K011-06

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001066667	A1	20010913	WO 2001-JP1782	20010307
W: US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
JP 2001254075	A2	20010918	JP 2000-64446	20000309
EP 1264872	A1	20021211	EP 2001-912160	20010307
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
US 2003189190	A1	20031009	US 2003-220807	20030414
PRAI JP 2000-64446	A	20000309		

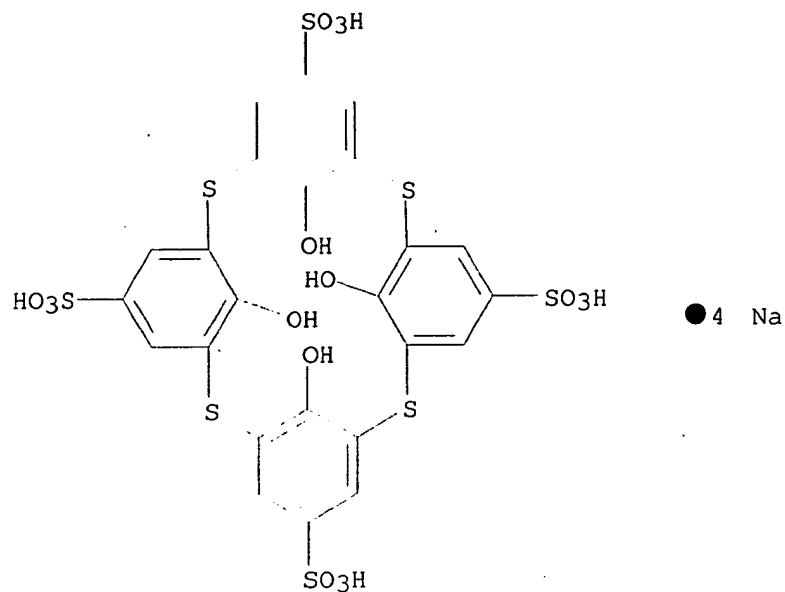
WO 2001-JP1782 W 20010307

OS MARPAT 135:233670
GI

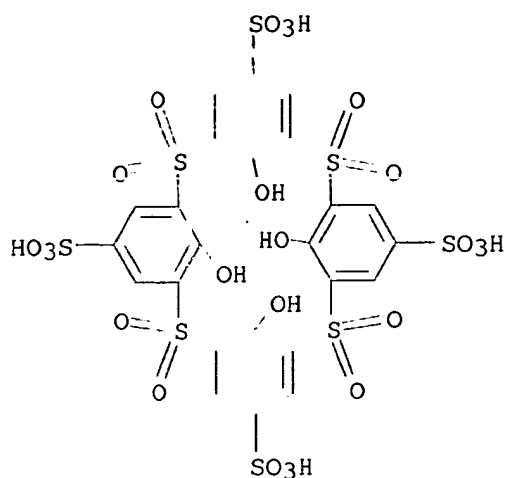
- AB The invention refers to a thiacalixarene, sulfinyl thiacalixarene, or sulfonyl thiacalixarene rare earth metal ion fluorescent **complex**
I [X = S, SO, or SO₂; n = 4 - 6; Y = H, hydrocarbon, halo-hydrocarbon, -COR₁, -OR₂, -COOR₃, -CN, -CONH₂, -NO₂, -NR₄R₅, halo, -SO₄R₆, or -SO₃R₇; R₁₋₅ = H, or hydrocarbon; R_{6,7} = H, hydrocarbon, or metal], and a fluorescent material composition obtained by dispersing or dissolving the fluorescent material in a medium.
- ST fluorescent material calix arene sulfur
- IT Fluorescent substances
(fluorescent material of cyclic phenol sulfide associated with metal and composition thereof)
- IT 10025-74-8, Dysprosium chloride 10042-88-3, Terbium chloride TbCl₃
10043-27-3, Terbium nitrate 10361-82-7, Samarium chloride
RL: DEV (Device component use); USES (Uses)
(fluorescent material of cyclic phenol sulfide associated with metal and composition thereof)
- IT 76-05-1P, uses 7722-84-1P, **Hydrogen Peroxide**
, uses 211561-04-5P 359416-51-6P
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(fluorescent material of cyclic phenol sulfide associated with metal and composition thereof)
- IT 64-19-7, Acetic acid, reactions 98-54-4, 4-tert-Butylphenol 143-24-8, Tetraethylene glycol dimethyl ether 7664-93-9, Sulfuric acid, reactions 7704-34-9, Sulfur, reactions 11138-47-9, Sodium perborate
RL: RCT (Reactant); RACT (Reactant or reagent)
(fluorescent material of cyclic phenol sulfide associated with metal and composition thereof)
- IT 60705-62-6P 182496-55-5P 204190-49-8P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(fluorescent material of cyclic phenol sulfide associated with metal and composition thereof)
- RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
- RE
- (1) Cosmo Research Institute; JP 11199581 A 1999 HCAPLUS
(2) Res Dev Corp Of Japan; JP 633049 A 1994
(3) Res Dev Corp Of Japan; JP 07206881 A 1995 HCAPLUS
- IT 7722-84-1P, **Hydrogen Peroxide**, uses 211561-04-5P 359416-51-6P
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(fluorescent material of cyclic phenol sulfide associated with metal and composition thereof)
- RN 7722-84-1 HCAPLUS
- CN Hydrogen peroxide (H₂O₂) (9CI) (CA INDEX NAME)

HO-OH

RN 211561-04-5 HCAPLUS
 CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-
 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-5,11,17,23-
 tetrasulfonic acid, 25,26,27,28-tetrahydroxy-, tetrasodium salt (9CI) (CA
 INDEX NAME)



RN 359416-51-6 HCAPLUS
 CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-
 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-5,11,17,23-
 tetrasulfonic acid, 25,26,27,28-tetrahydroxy-, 2,2,8,8,14,14,20,20-
 octaoxide, tetrasodium salt (9CI) (CA INDEX NAME)



● 4 Na

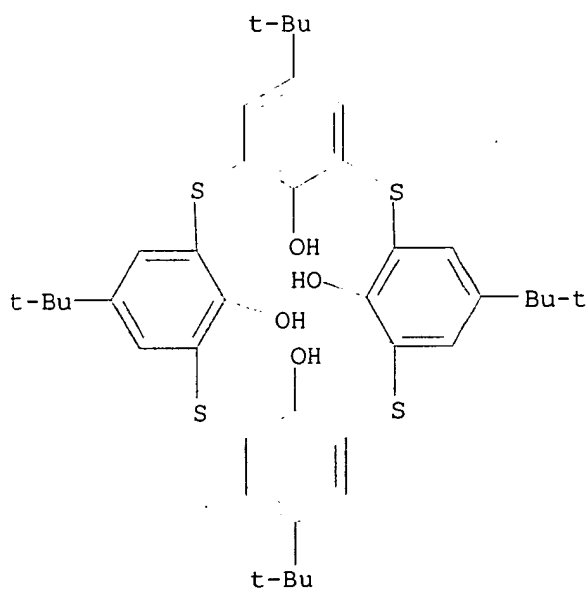
IT 182496-55-5P 204190-49-8P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(fluorescent material of cyclic phenol sulfide associated with metal and composition thereof)

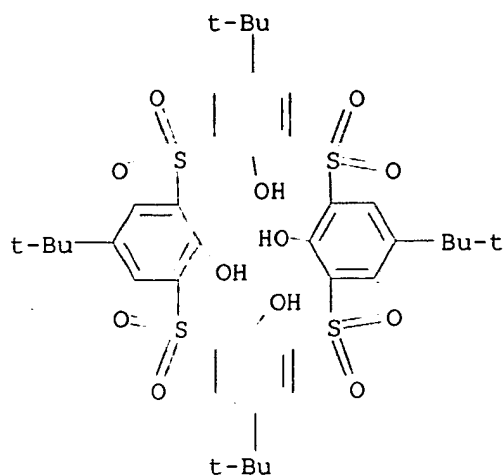
RN 182496-55-5 HCAPLUS

CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)

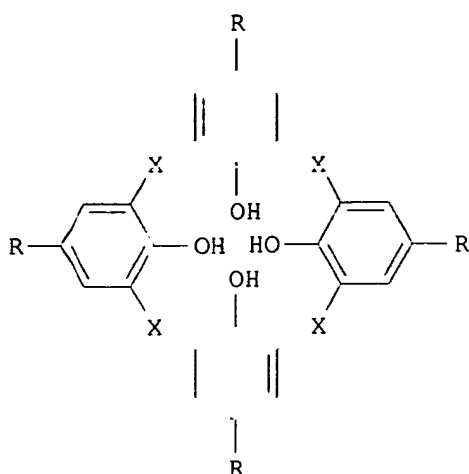


RN 204190-49-8 HCAPLUS

CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)-, 2,2,8,8,14,14,20,20-octaoxide (9CI) (CA INDEX NAME)



L58 ANSWER 3 OF 16 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 2001:457157 HCAPLUS
 DN 135:257224
 ED Entered STN: 25 Jun 2001
 TI Selective oxidation of thiocalix[4]arenes to the sulfinyl and sulfonyl counterparts and their **complexation** abilities toward metal ions as studied by solvent extraction
 AU Morohashi, N.; Iki, N.; Sugawara, A.; Miyano, S.
 CS Graduate School of Engineering, Department of Biomolecular Engineering, Tohoku University, Aoba-ku, Sendai, 980-8579, Japan
 SO Tetrahedron (2001), 57(26), 5557-5563
 CODEN: TETRAB; ISSN: 0040-4020
 PB Elsevier Science Ltd.
 DT Journal
 LA English
 CC 28-23 (Heterocyclic Compounds (More Than One Hetero Atom))
 Section cross-reference(s): 68
 OS CASREACT 135:257224
 GI



- AB Practical methods for the synthesis of sulfinyl- and sulfonylcalix[4]arenes I [X = S(:O), SO₂; R = Me₃C, Me₃CCH₂C(Me)₂] were provided by the selective oxidation of thiacalix[4]arenes I [X = S; R = Me₃CCH₂C(Me)₂] with controlled amts. of an oxidant such as NaBO₃ or **hydrogen peroxide** under mild conditions. The coordination ability of thiacalix[4]arene I [X = S; R = Me₃CCH₂C(Me)₂] and the sulfinyl and sulfonyl analogs toward a wide variety of metal ions was investigated by solvent extraction and compared to that of the conventional methylene-bridged calix[4]arene I [X = H₂C; R = Me₃CCH₂C(Me)₂]. It was shown that the metal-ion selectivities of thiacalixarenes I [X = S, S(:O), SO₂; R = Me₃CCH₂C(Me)₂] were controlled by the oxidation state of the bridging sulfur moiety. I [X = S; R = Me₃CCH₂C(Me)₂] preferred soft metal ions by binding with S, while I [X = SO₂; R = Me₃CCH₂C(Me)₂] preferred hard metal ions by ligating with the sulfonyl oxygens in addition to the adjacent two phenoxide oxygens, resp. In good accordance with this hypothesis, I [X = S(:O); R = Me₃CCH₂C(Me)₂] could bind to both hard and soft metal ions by using sulfinyl O and S, resp. These made sharp contrast to the parent I [X = H₂C; R = Me₃CCH₂C(Me)₂] which could not essentially extract any metal ions at all, lacking any lone pair electrons on the methylene bridges for coordination.
- ST thiacalixarene sulfinylcalixarene sulfonylcalixarene prepn metal ion **complexation**
- IT Metacyclophanes
RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(calixarenes; preparation and metal ion **complexation** selectivities of thia-, sulfinyl- and sulfonylcalixarenes)
- IT Alkali metals, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(ions; lack of **complexation** of metal ions by thia-, sulfinyl- and sulfonylcalixarenes)
- IT Alkaline earth metals
Rare earth metals, processes
Transition metals, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(ions; preparation and metal ion **complexation** selectivities of thia-, sulfinyl- and sulfonylcalixarenes)
- IT **Complexation**
(preparation and metal ion **complexation** selectivities of thia-, sulfinyl- and sulfonylcalixarenes)
- IT 7439-93-2D, Lithium, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7439-98-7D, Molybdenum, thia,sulfinyl;and

sulfonyl calix[4]arene **complexes**, processes 7440-06-4D, Platinum, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-09-7D, Potassium, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-16-6D, Rhodium, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-17-7D, Rubidium, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-23-5D, Sodium, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-28-0D, Thallium, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-36-0D, Antimony, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-46-2D, Cesium, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-47-3D, Chromium, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes

RL: FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); FORM (Formation, nonpreparative); PROC (Process)

(lack of **complexation** of metal ions by thia-, sulfinyl- and sulfonylcalixarenes)

IT 7439-89-6D, Iron, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7439-92-1D, Lead, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7439-95-4D, Magnesium, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7439-96-5D, Manganese, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7439-97-6D, Mercury, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-02-0D, Nickel, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-05-3D, Palladium, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-10-0D, praseodymium, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-22-4D, Silver, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-24-6D, Strontium, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-32-6D, Titanium, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-39-3D, Barium, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-43-9D, Cadmium, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-48-4D, Cobalt, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-50-8D, Copper, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-53-1D, Europium, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-57-5D, Gold, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-58-6D, Hafnium, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-65-5D, Yttrium, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-66-6D, Zinc, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-67-7D, Zirconium, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-69-9D, Bismuth, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-70-2D, Calcium, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes

RL: FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); FORM (Formation, nonpreparative); PROC (Process)

(preparation and metal ion **complexation** selectivities of thia-, sulfinyl- and sulfonylcalixarenes)

IT 182496-64-6DP, Metal **complexes** 215511-22-1DP, Metal **complexes** 362055-65-0DP, Metal **complexes**

RL: FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); SPN (Synthetic preparation); FORM (Formation, nonpreparative); PREP (Preparation); PROC (Process)

(preparation and metal ion **complexation** selectivities of thia-, sulfinyl- and sulfonylcalixarenes)

IT 42607-92-1D, Metal **complexes**

RL: FMU (Formation, unclassified); PRP (Properties); FORM (Formation,

nonpreparative)

(preparation and metal ion **complexation** selectivities of thia-,
sulfinyl- and sulfonylcalixarenes)

IT 182496-64-6

RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC
(Process); RACT (Reactant or reagent)

(preparation and metal ion **complexation** selectivities of thia-,
sulfinyl- and sulfonylcalixarenes)

IT 215511-22-1P 362055-65-0P

RL: PEP (Physical, engineering or chemical process); SPN (Synthetic
preparation); PREP (Preparation); PROC (Process)

(preparation and metal ion **complexation** selectivities of thia-,
sulfinyl- and sulfonylcalixarenes)

IT 182496-55-5

RL: RCT (Reactant); RACT (Reactant or reagent)

(preparation and metal ion **complexation** selectivities of thia-,
sulfinyl- and sulfonylcalixarenes)

IT 204190-49-8P 221098-82-4P

RL: SPN (Synthetic preparation); PREP (Preparation)

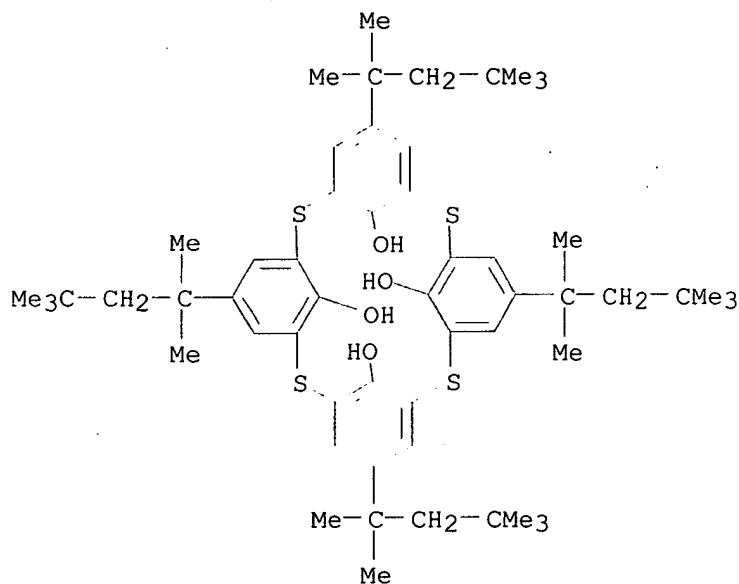
(preparation and metal ion **complexation** selectivities of thia-,
sulfinyl- and sulfonylcalixarenes)

RE.CNT 50 THERE ARE 50 CITED REFERENCES AVAILABLE FOR THIS RECORD

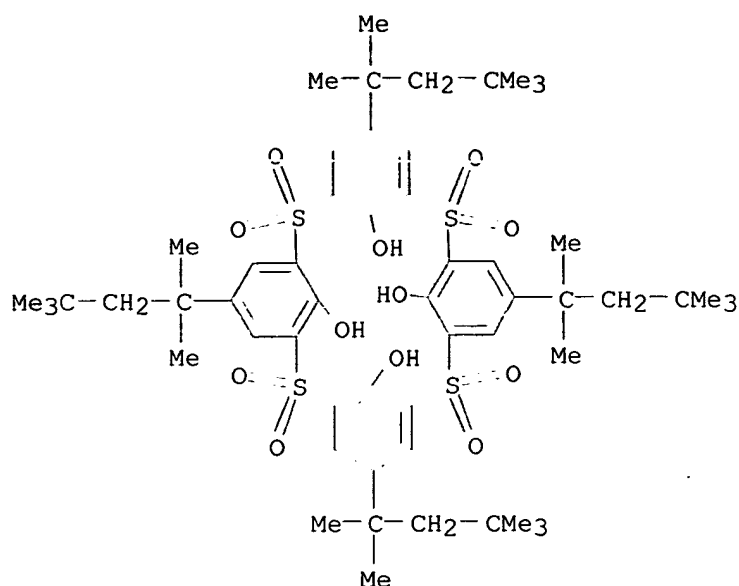
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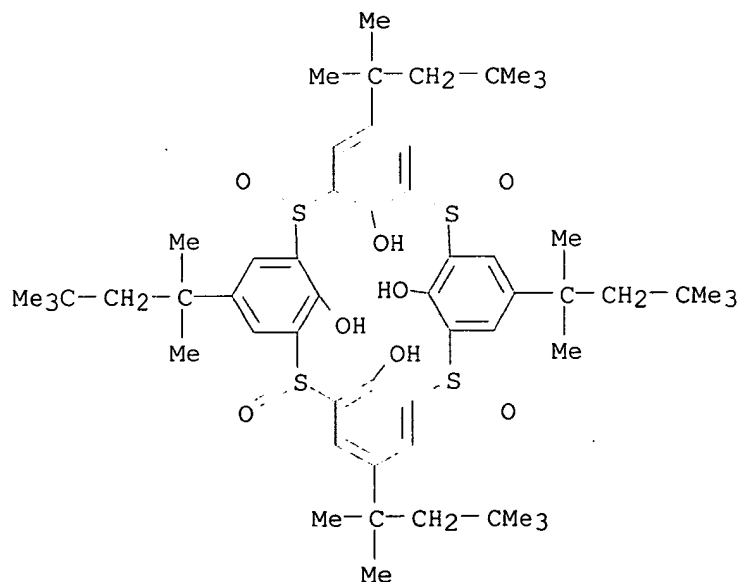
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 IT 182496-64-6DP, Metal complexes 215511-22-1DP, Metal complexes 362055-65-ODP, Metal complexes
 RL: FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); SPN (Synthetic preparation); FORM (Formation, nonpreparative); PREP (Preparation); PROC (Process)
 (preparation and metal ion complexation selectivities of thia-, sulfinyl- and sulfonylcalixarenes)
 RN 182496-64-6 HCAPLUS
 CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosal-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1,3,3-tetramethylbutyl)- (9CI) (CA INDEX NAME)



- RN 215511-22-1 HCAPLUS
 CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosal-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1,3,3-tetramethylbutyl)-, 2,2,8,8,14,14,20,20-octaoxide (9CI) (CA INDEX NAME)

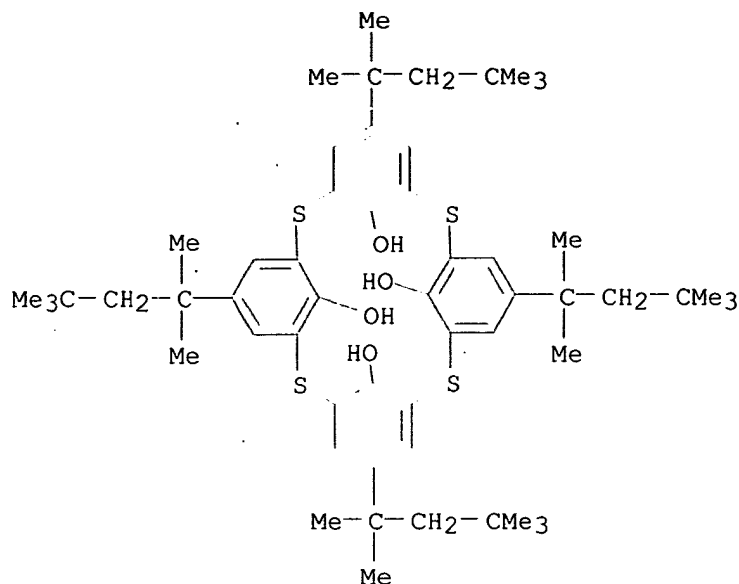


RN 362055-65-0 HCAPLUS
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IT 182496-64-6
 RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
 (preparation and metal ion **complexation** selectivities of thia-, sulfinyl- and sulfonylcalixarenes)
 RN 182496-64-6 HCAPLUS
 CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosane-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1,3,3-tetramethylbutyl)- (9CI) (CA INDEX

NAME)



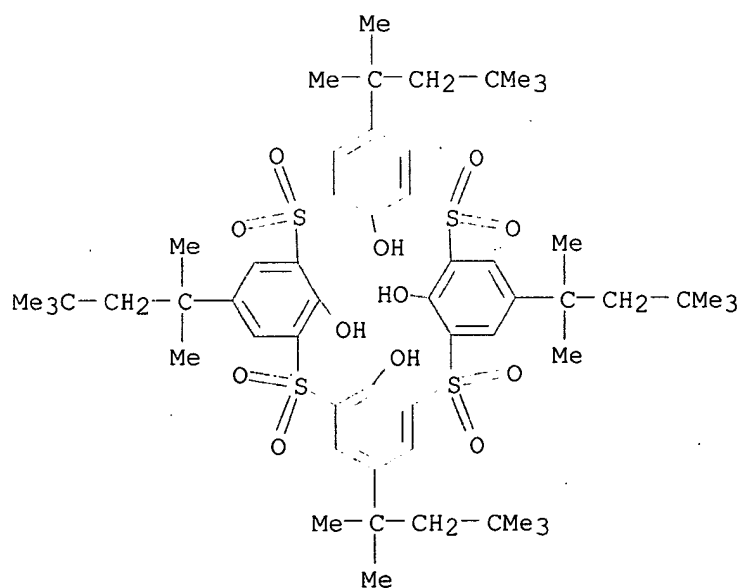
IT 215511-22-1P 362055-65-0P

RL: PEP (Physical, engineering or chemical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)

(preparation and metal ion **complexation** selectivities of thia-, sulfinyl- and sulfonylcalixarenes)

RN 215511-22-1 HCAPLUS

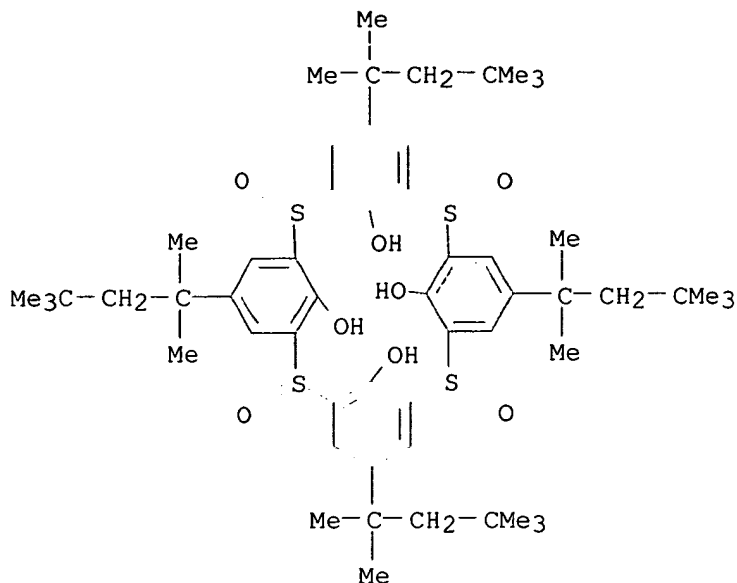
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacos-
 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-
 tetrol, 5,11,17,23-tetrakis(1,1,3,3-tetramethylbutyl)-,
 2,2,8,8,14,14,20,20-octaoxide (9CI) (CA INDEX NAME)



RN 362055-65-0 HCAPLUS

CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacos-

1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1,3,3-tetramethylbutyl)-, 2,8,14,20-tetraoxide (9CI) (CA INDEX NAME)



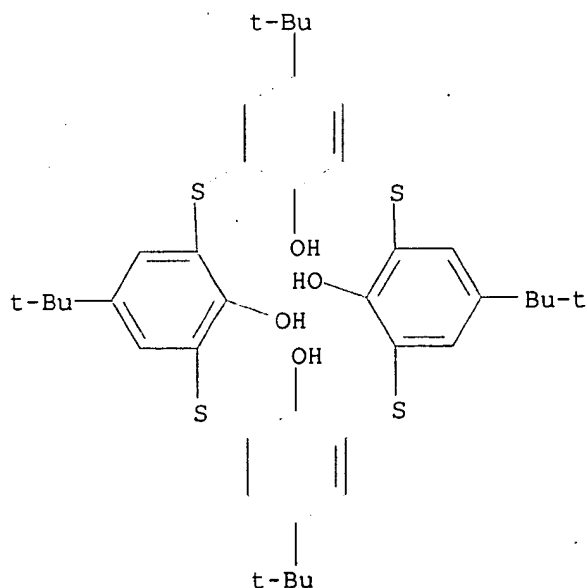
IT 182496-55-5

RL: RCT (Reactant); RACT (Reactant or reagent)

(preparation and metal ion **complexation** selectivities of thia-, sulfinyl- and sulfonylcalixarenes)

RN 182496-55-5 HCAPLUS

CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacos-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



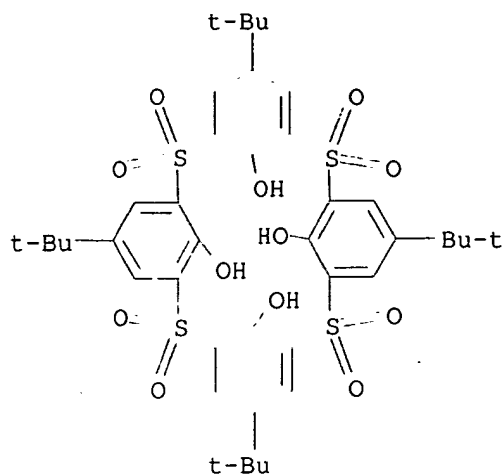
IT 204190-49-8P 221098-82-4P

RL: SPN (Synthetic preparation); PREP (Preparation)

(preparation and metal ion **complexation** selectivities of thia-, sulfinyl- and sulfonylcalixarenes)

RN 204190-49-8 HCAPLUS

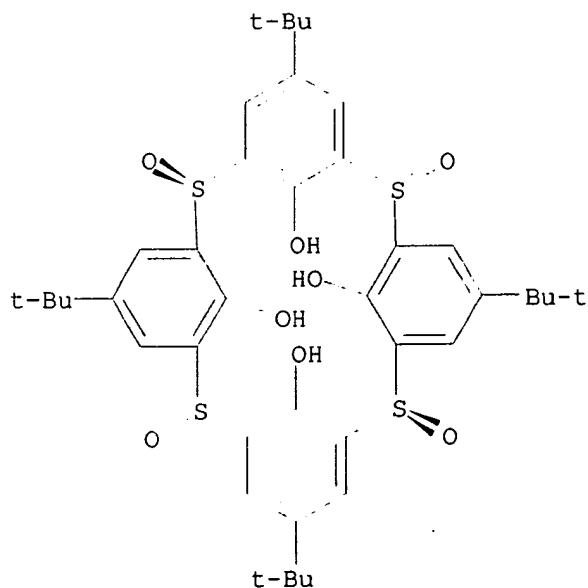
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)-, 2,2,8,8,14,14,20,20-octaoxide (9CI) (CA INDEX NAME)



RN 221098-82-4 HCAPLUS

CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)-, 2,8,14,20-tetraoxide, stereoisomer (9CI) (CA INDEX NAME)

Relative stereochemistry.



L58 ANSWER 4 OF 16 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2000:685762 HCAPLUS

DN 134:53255

ED Entered STN: 29 Sep 2000

TI Peroxidase-like catalytic activity of metal **complexes** of thiactalix[4]arenetetrasulfonate on the modified ion-exchanger and its application to the determination of **hydrogen peroxide**

AU Odo, Junichi; Kawahara, Nobuko; Inomata, Yu; Inoue, Aya; Takeya, Haruhiko; Miyanari, Setsuko; Kumagai, Hitoshi

CS Faculty of Science, Okayama University of Science, Okayama, 700-0005, Japan

SO Analytical Sciences (2000), 16(9), 963-966
CODEN: ANSCEN; ISSN: 0910-6340

PB Japan Society for Analytical Chemistry

DT Journal

LA English

CC 9-2 (Biochemical Methods)
Section cross-reference(s): 7, 79, 80

AB The peroxidase-like catalytic activity of ion-exchangers modified with some metal **complexes** of thiactalix[4]arenetetrasulfonate (Me-TCAS, Me=Fe3+, Fe2+, Co2+, Mn2+, Cu2+, Zn2+ and Ni2+) was investigated based on a color reaction catalyzed by peroxidase. The ion-exchanger modified with Fe3+-TCAS showed the highest activity among the metal **complexes** tested, and was applied to the determination of **hydrogen peroxide**. The calibration curve for the ion-exchanger modified with Fe3+-TCAS was linear over the range from 10 to 100 µg of **hydrogen peroxide** in a 1 mL sample solution. Moreover, the method using glucose oxidase and the ion-exchanger modified with Fe3+-TCAS was applied for the determination of glucose. The ion-exchanger modified with Fe3+-TCAS may be applicable for the determination of **hydrogen peroxide** in place of peroxidase.

ST peroxidase thiactalix arenetetrasulfonate ion exchanger **hydrogen peroxide** glucose

IT 50-99-7, D-Glucose, analysis 7722-84-1, **Hydrogen peroxide**, analysis
RL: ANT (Analyte); ANST (Analytical study)
(peroxidase-like catalytic activity of metal **complexes** of thiactalix[4]arenetetrasulfonate on modified ion-exchanger and application to determination of **hydrogen peroxide**)

IT 83-07-8, 4-Aminoantipyrine 9003-99-0, Peroxidase
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(peroxidase-like catalytic activity of metal **complexes** of thiactalix[4]arenetetrasulfonate on modified ion-exchanger and application to determination of **hydrogen peroxide**)

IT 9001-37-0, Glucose oxidase
RL: ARG (Analytical reagent use); CAT (Catalyst use); ANST (Analytical study); USES (Uses)
(peroxidase-like catalytic activity of metal **complexes** of thiactalix[4]arenetetrasulfonate on modified ion-exchanger and application to determination of **hydrogen peroxide**)

IT 14701-22-5DP, Ni2+, **complexes** with thiactalix[4]arenetetrasulfonate, preparation 15158-11-9DP, Cu2+, **complexes** with thiactalix[4]arenetetrasulfonate, preparation 15438-31-0DP, Fe2+, **complexes** with thiactalix[4]arenetetrasulfonate, preparation 16397-91-4DP, Mn2+, **complexes** with thiactalix[4]arenetetrasulfonate, preparation 20074-52-6DP, Fe3+, **complexes** with thiactalix[4]arenetetrasulfonate, preparation 22541-53-3DP, Co2+, **complexes** with thiactalix[4]arenetetrasulfonate, preparation 23713-49-7DP, Zn2+, **complexes** with thiactalix[4]arenetetrasulfonate, preparation 237770-97-7DP, **complexes** with metal ions
RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(peroxidase-like catalytic activity of metal **complexes** of thiactalix[4]arenetetrasulfonate on modified ion-exchanger and

application to determination of **hydrogen peroxide**)

IT 373-02-4, Nickel diacetate 557-34-6, Zinc diacetate 638-38-0, Manganese diacetate 7447-39-4, Copper chloride (CuCl₂), reactions 7705-08-0, Iron chloride (FeCl₃), reactions 10045-89-3 10241-04-0, Cobalt chloride (CoCl₃) 211561-04-5

RL: RCT (Reactant); RACT (Reactant or reagent)
(peroxidase-like catalytic activity of metal **complexes** of thiacalix[4]arenetetrasulfonate on modified ion-exchanger and application to determination of **hydrogen peroxide**)

RE.CNT 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD

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IT 7722-84-1, **Hydrogen peroxide**, analysis

RL: ANT (Analyte); ANST (Analytical study)
(peroxidase-like catalytic activity of metal **complexes** of thiacalix[4]arenetetrasulfonate on modified ion-exchanger and application to determination of **hydrogen peroxide**)

RN 7722-84-1 HCAPLUS

CN Hydrogen peroxide (H₂O₂) (9CI) (CA INDEX NAME)

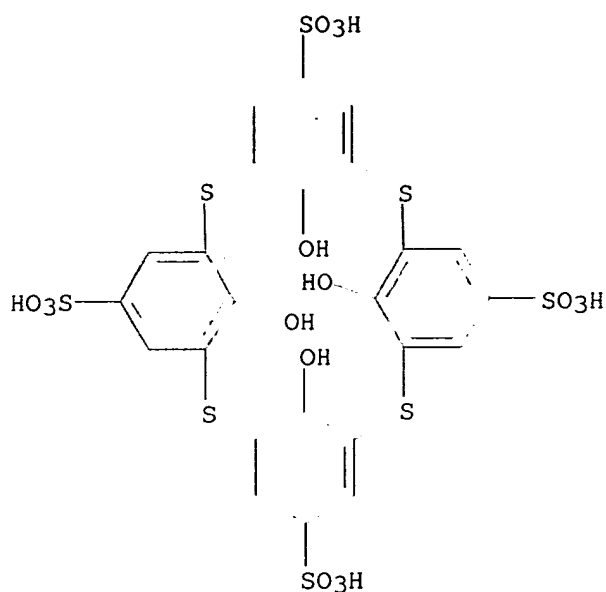
HO-OH

IT 237770-97-7DP, **complexes** with metal ions

RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(peroxidase-like catalytic activity of metal **complexes** of thiacalix[4]arenetetrasulfonate on modified ion-exchanger and application to determination of **hydrogen peroxide**)

RN 237770-97-7 HCAPLUS

CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosal(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-5,11,17,23-tetrasulfonic acid, 25,26,27,28-tetrahydroxy- (9CI) (CA INDEX NAME)



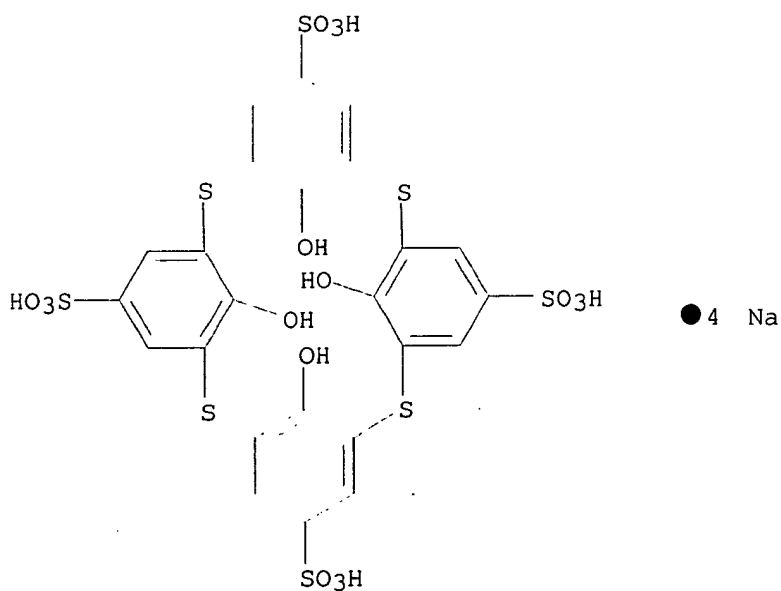
IT 211561-04-5

RL: RCT (Reactant); RACT (Reactant or reagent)

(peroxidase-like catalytic activity of metal **complexes** of
thiacalix[4]arenetetrasulfonate on modified ion-exchanger and
application to determination of **hydrogen peroxide**)

RN 211561-04-5 HCAPLUS

CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-
1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-5,11,17,23-
tetrasulfonic acid, 25,26,27,28-tetrahydroxy-, tetrasodium salt (9CI) (CA
INDEX NAME)



L58 ANSWER 5 OF 16 HCAPLUS COPYRIGHT 2004 ACS on STN

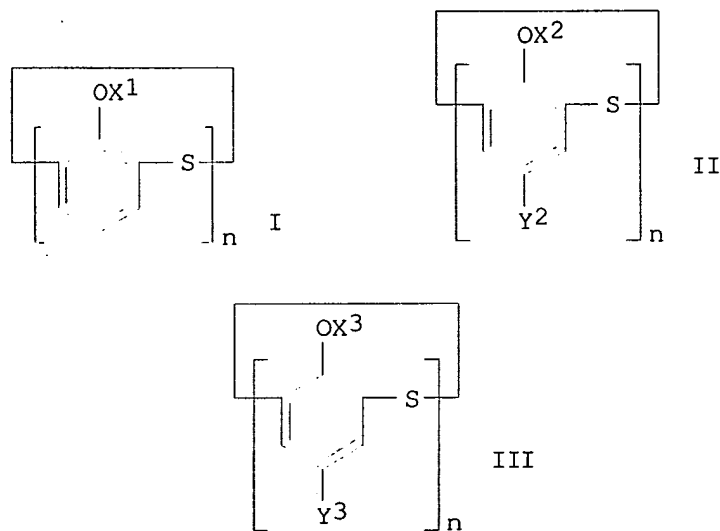
AN 2000:428008 HCAPLUS

DN 133:43542

ED Entered STN: 27 Jun 2000
 TI Preparation of cyclic phenol sulfide aminoalkyl derivatives, and agents and process for separation and recovery of **metals**
 IN Hamada, Fumio; Narita, Miyuki; Takeya, Haruhiko; Miyanari, Setsuko; Kumagaya, Hitoshi
 PA Cosmo Sogo Kenkyusho K. K., Japan; Cosmo Oil Co., Ltd.
 SO Jpn. Kokai Tokkyo Koho, 10 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM C07D341-00
 ICS C09K003-00
 CC 28-23 (Heterocyclic Compounds (More Than One Hetero Atom))
 Section cross-reference(s): 54, 60

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000178271	A2	20000627	JP 1998-375819	19981218 <--
PRAI	JP 1998-375819		19981218 <--		
OS	CASREACT 133:43542; MARPAT 133:43542				
GI					

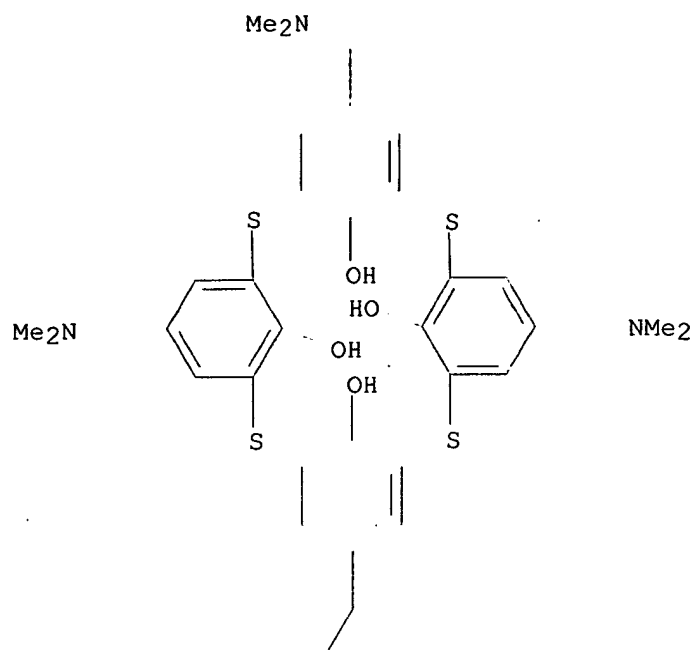


AB Reactions of cyclic phenol sulfides I ($X_1 = \text{H, alkyl}$; $n = 4-8$) with aldehydes and amines give cyclic phenol sulfide aminoalkyl derivs. II ($X_2 = \text{H, alkyl}$; $Y_2 = \text{H, RNR}_1\text{R}_2$; at least one of Y_2 is RNR_1R_2 ; $n = 4-8$; $\text{R} = \text{alkylene, alkylcarbonyl}$; $\text{R}_1, \text{R}_2 = \text{H, alkyl}$; NR_1R_2 may form a heterocycle). **Metals** are separated and recovered by treatment with agents containing cyclic phenol sulfide aminoalkyl derivs. III ($X_3 = \text{H, alkyl, acyl, alkylsulfonyl}$; $Y_3 = \text{H, R}_3\text{NR}_4\text{R}_5$; at least one of Y_3 is $\text{R}_3\text{NR}_4\text{R}_5$; $Z = \text{S, SO, SO}_2$; $n = 4-8$; $\text{R}_3 = \text{alkylene, alkylcarbonyl}$; $\text{R}_4, \text{R}_5 = \text{H, alkyl}$; NR_4R_5 may form a heterocycle). Reaction of 4-tert-butylphenol with S in the presence of NaOH and dealkylation of the product in the presence of AlCl_3 gave I ($X_1 = \text{H, } n = 4$), which was stirred with Me_2NH and HCHO in 1,4-dioxane at 80° for 48 h to give II ($X_2 = \text{H, } Y_2 = \text{CH}_2\text{NMe}_2$, $n = 4$) (IV). A CHCl_3 solution (10 mL) containing $5.0 + 10^{-4}\text{M}$ IV was shaken with 10 mL aqueous solution containing $1.0 + 10^{-4}\text{M}$ NaCl at room temperature for 10 min to show 85% extraction of Na. IV was also effective for extraction of K, Cr,

Ni, Cu, Cd, and Al from aqueous solns. containing chlorides of each metal

- ST cyclic phenol sulfide aminoalkyl prepn; metal extn recovery
cyclic phenol sulfide
- IT Wastewater treatment
(extraction; preparation of cyclic phenol sulfide aminoalkyl derivs. for extraction and recovery of metals)
- IT Metals, preparation
RL: PUR (Purification or recovery); REM (Removal or disposal); PREP (Preparation); PROC (Process)
(preparation of cyclic phenol sulfide aminoalkyl derivs. for extraction and recovery of metals)
- IT 276245-96-6P 276245-97-7P 276245-98-8P
276245-99-9P 276246-00-5P
RL: IMF (Industrial manufacture); NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(preparation of cyclic phenol sulfide aminoalkyl derivs. for extraction and recovery of metals)
- IT 182496-55-5P 182496-69-1P
RL: IMF (Industrial manufacture); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation of cyclic phenol sulfide aminoalkyl derivs. for extraction and recovery of metals)
- IT 540-72-7P, Sodium thiocyanate 557-42-6P, Zinc thiocyanate 7446-70-0P, Aluminum chloride (AlCl₃), preparation 7447-39-4P, Copper(II) chloride, preparation 7447-40-7P, Potassium chloride, preparation 7647-14-5P, Sodium chloride, preparation 7718-54-9P, Nickel chloride, preparation 10025-73-7P, Chromium(III) chloride 10108-64-2P, Cadmium chloride
RL: PRP (Properties); PUR (Purification or recovery); RCT (Reactant); REM (Removal or disposal); PREP (Preparation); PROC (Process); RACT (Reactant or reagent)
(preparation of cyclic phenol sulfide aminoalkyl derivs. for extraction and recovery of metals)
- IT 7429-90-5P, Aluminum, preparation 7440-02-0P, Nickel, preparation 7440-09-7P, Potassium, preparation 7440-23-5P, Sodium, preparation 7440-43-9P, Cadmium, preparation 7440-47-3P, Chromium, preparation 7440-50-8P, Copper, preparation 7440-66-6P, Zinc, preparation
RL: PUR (Purification or recovery); REM (Removal or disposal); PREP (Preparation); PROC (Process)
(preparation of cyclic phenol sulfide aminoalkyl derivs. for extraction and recovery of metals)
- IT 50-00-0, Formaldehyde, reactions 98-54-4 109-01-3, 1-Methylpiperazine 109-89-7, Diethylamine, reactions 110-89-4, Piperidine, reactions 110-91-8, Morpholine, reactions 124-40-3, Dimethylamine, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of cyclic phenol sulfide aminoalkyl derivs. for extraction and recovery of metals)
- IT 276245-96-6P 276245-97-7P 276245-98-8P
276245-99-9P 276246-00-5P
RL: IMF (Industrial manufacture); NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(preparation of cyclic phenol sulfide aminoalkyl derivs. for extraction and recovery of metals)
- RN 276245-96-6 HCAPLUS
- CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosal-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis[(dimethylamino)methyl]- (9CI) (CA INDEX NAME)

PAGE 1-A

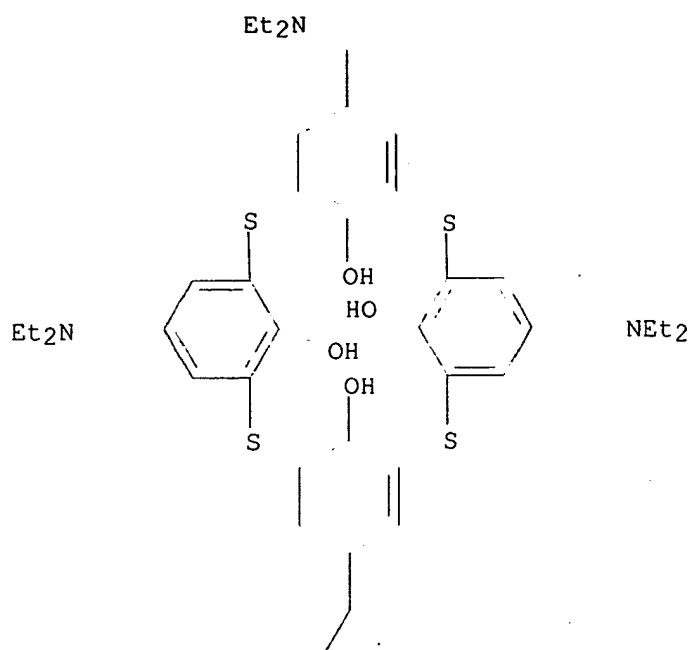


PAGE 2-A

Me_2N

RN 276245-97-7 HCAPLUS
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 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-
 tetrol, 5,11,17,23-tetrakis[(diethylamino)methyl]- (9CI) (CA INDEX NAME)

PAGE 1-A

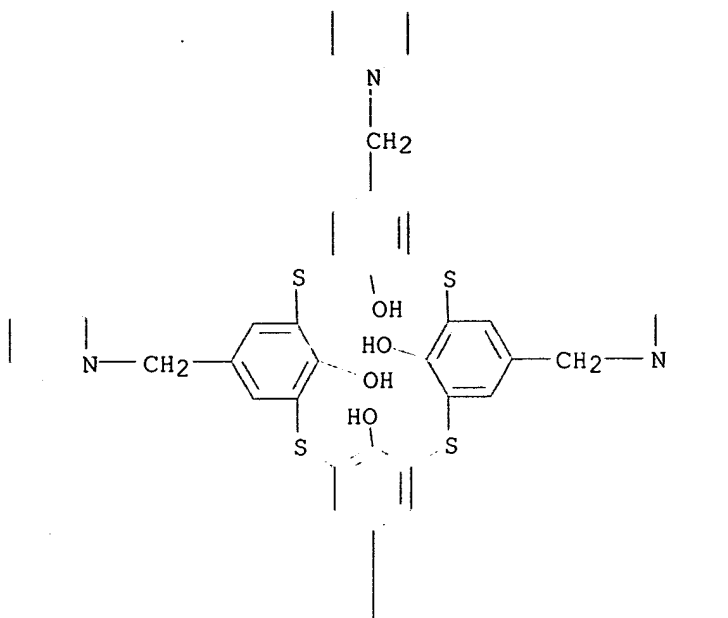


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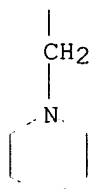


RN 276245-98-8 HCAPLUS
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 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-
 tetrol, 5,11,17,23-tetrakis(1-piperidinylmethyl)- (9CI) (CA INDEX NAME)

PAGE 1-A

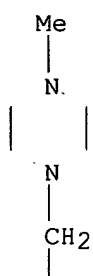


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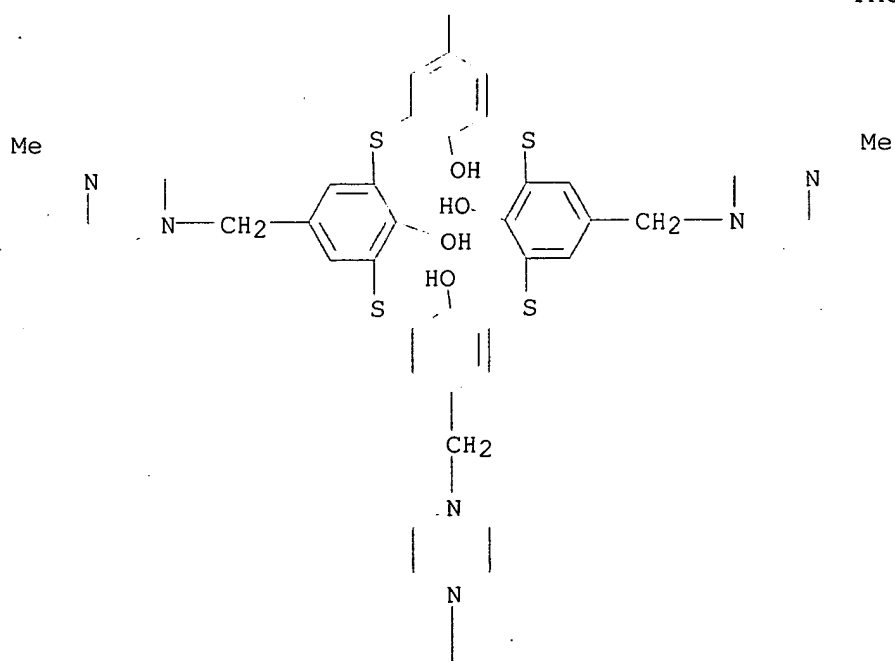


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 CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacos-
 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-
 tetrol, 5,11,17,23-tetrakis[(4-methyl-1-piperazinyl)methyl]- (9CI) (CA
 INDEX NAME)

PAGE 1-A



PAGE 2-A

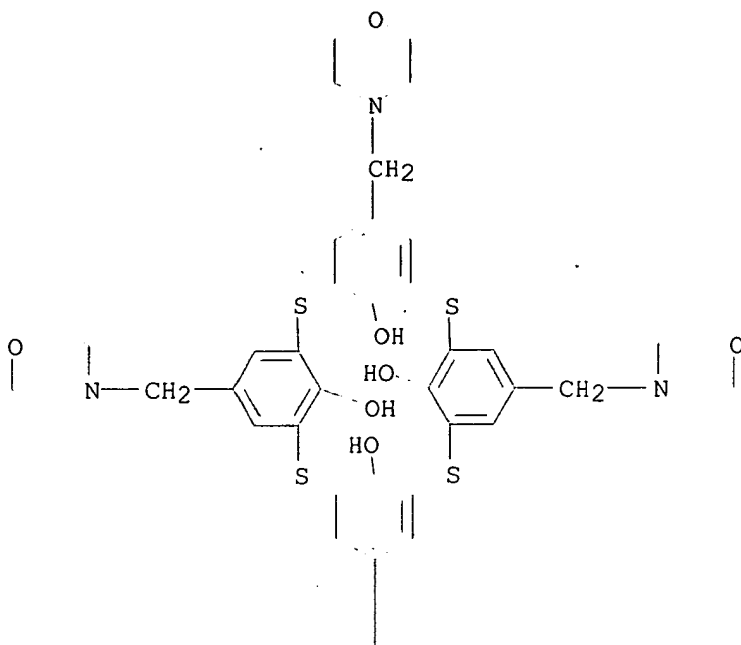


PAGE 3-A

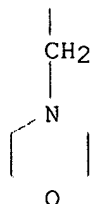


RN 276246-00-5 HCAPLUS
 CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-
 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-
 tetrol, 5,11,17,23-tetrakis(4-morpholinylmethyl)- (9CI) (CA INDEX NAME)

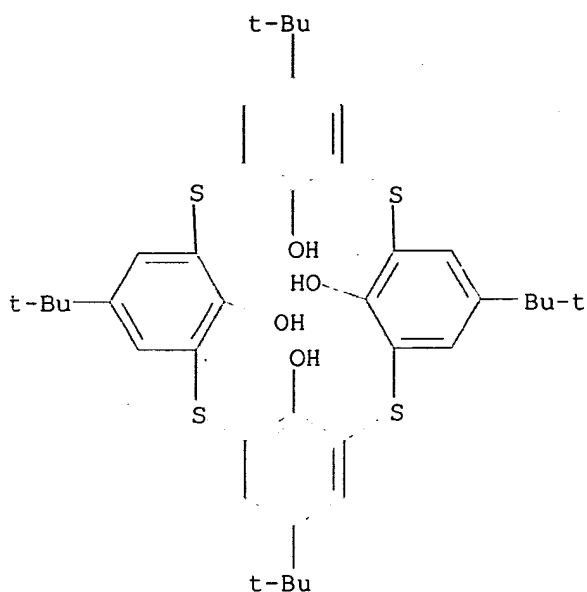
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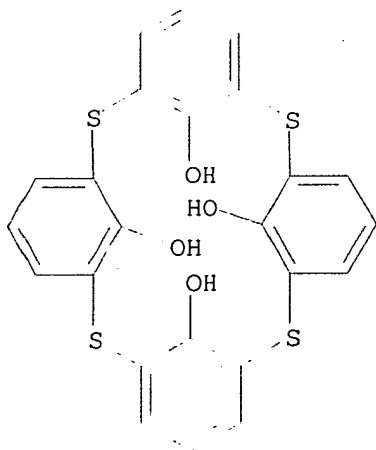
PAGE 2-A



IT 182496-55-5P 182496-69-1P
 RL: IMF (Industrial manufacture); RCT (Reactant); SPN (Synthetic
 preparation); PREP (Preparation); RACT (Reactant or reagent)
 (preparation of cyclic phenol sulfide aminoalkyl derivs. for extraction and
 recovery of metals)
 RN 182496-55-5 HCAPLUS
 CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-
 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-
 tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



RN 182496-69-1 HCAPLUS
 CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacos-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol (9CI) (CA INDEX NAME)



IT 7440-02-0P, Nickel, preparation 7440-09-7P, Potassium, preparation 7440-23-5P, Sodium, preparation 7440-43-9P, Cadmium, preparation 7440-47-3P, Chromium, preparation 7440-50-8P, Copper, preparation 7440-66-6P, Zinc, preparation
 RL: PUR (Purification or recovery); REM (Removal or disposal); PREP (Preparation); PROC (Process)
 (preparation of cyclic phenol sulfide aminoalkyl derivs. for extraction and recovery of **metals**)
 RN 7440-02-0 HCAPLUS
 CN Nickel (8CI, 9CI) (CA INDEX NAME)

Ni

RN 7440-09-7 HCAPLUS
CN Potassium (8CI, 9CI) (CA INDEX NAME)

K

RN 7440-23-5 HCAPLUS
CN Sodium (8CI, 9CI) (CA INDEX NAME)

Na

RN 7440-43-9 HCAPLUS
CN Cadmium (8CI, 9CI) (CA INDEX NAME)

Cd

RN 7440-47-3 HCAPLUS
CN Chromium (8CI, 9CI) (CA INDEX NAME)

Cr

RN 7440-50-8 HCAPLUS
CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

RN 7440-66-6 HCAPLUS
CN Zinc (7CI, 8CI, 9CI) (CA INDEX NAME)

Zn

L58 ANSWER 6 OF 16 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2000:277973 HCAPLUS
DN 132:302530
ED Entered STN: 28 Apr 2000
TI Preparation of cyclic phenol sulfide-metal complexes,
catalysts comprising the same, and analytical methods for hydrogen
peroxide
IN Odo, Junichi; Kawahara, Nobuko; Akashi, Koichi
; Miyano, Sotaro; Iki, Nobuhiko; Morohashi,
Naoya; Takeya, Haruhiko; Miyanari, Setsuko;
Kumagai, Hitoshi
PA Cosmo Research Institute, Japan; Cosmo Oil Co., Ltd.;
et al.
SO PCT Int. Appl., 48 pp.
CODEN: PIXXD2
DT Patent
LA Japanese
IC ICM C07D341-00
ICS B01J031-22; G01N021-59; C07C205-22; C07C201-12; C07D231-46;

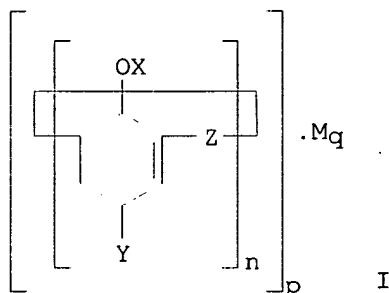
C07B033-00; C07B037-06

CC 78-7 (Inorganic Chemicals and Reactions)

Section cross-reference(s): 67

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000023435	A1	20000427	WO 1999-JP5819	19991021 <--
	W: US				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	JP 2000191658	A2	20000711	JP 1999-144750	19990525 <--
	EP 1123930	A1	20010816	EP 1999-949349	19991021 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
	EP 1327619	A1	20030716	EP 2003-4996	19991021 <--
	R: DE, FR, GB, IT				
	EP 1327618	A1	20030716	EP 2003-4997	19991021 <--
	R: DE, FR, GB, IT				
PRAI	JP 1998-318333	A	19981022	<--	
	JP 1999-144750	A	19990525	<--	
	EP 1999-949349	A3	19991021	<--	
	WO 1999-JP5819	W	19991021	<--	
OS	MARPAT 132:302530				
GI					



AB Described are thiacalixarene-metal complexes (I; X = H, hydrocarbyl, acyl, carboxyalkyl, carbamoylalkyl; Y = H, hydrocarbyl, halohydrocarbyl, halo, acyl, HO, CO₂H, amido, NH₂, NO₂, cyano, SO₂Cl, alkoxysulfonyloxy, SO₃H; Z = Sm, SO, SO₂; m = 1-7; n = 4-8; M = group 8, 1A-7A, and 1B, or 3B metal; p, q = composition ratio which is >1) which serve as catalysts in various chemical reactions or as materials in the information-electronics industry, exhibit peroxidase-like activities or high hydrolytic activities for phosphoric diesters, and can easily hybridize with base sequence recognition sites; and novel anal. methods for hydrogen peroxide with the complexes exhibiting peroxidase-like activities. The above metal complexes are prepared by bringing a cyclic phenol sulfide represented by general formula (II; X, Y, Z, n = same as above) into contact with at least one member selected from among Group 8, 1A to 7A, 1B and 3B metals, and are usable as catalysts for the oxidation with hydrogen peroxide or those for the hydrolysis of phosphoric diesters, the hydrolysis catalysts being useful also in the anal. for hydrogen peroxide. Thus, 4-tert-butylphenol 45.2, elemental sulfur 144.4, and NaOH 3.0 g were gradually heated to 230° with stirring and further stirred for 2 h with removal of H₂O and H₂S to give 4.32 g II (X = H, Y1 = tert-Bu, Z1 = S, m = 1, n = 4). A

solution of the latter compound in CHCl_3 ($1+10^{-3}$ M, 10 mL) and a solution of MnCl_2 , FeCl_2 , or CoCl_2 in Tris-HCl buffer (pH 8.0) ($1+10^{-3}$ M, 10 ML) were shaken at room temperature for 24 h. The CHCl_3 layer was separated

and

CHCl_3 was distilled off to give I ($X = \text{H}$, $Y = \text{tert-Bu}$, $Z = \text{S}$, $m = 1$, $n = 4$, $p = 1$, $q = 1$, $M = \text{Mn}$), I ($M = \text{Fe}$), and I ($M = \text{Co}$) as a white, purple, and yellow-green powder, resp.

- ST cyclic phenol sulfide metal complex prepn hydrolysis catalyst; phosphoric diester hydrolysis catalyst; hydrogen peroxide analysis; oxidn catalyst; thiacalixarene metal complex prepn
- IT Metacyclophanes
 RL: ARG (Analytical reagent use); CAT (Catalyst use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
 (calixarenes; preparation of cyclic phenol sulfide-metal complexes, catalysts comprising same, and anal. methods for hydrogen peroxide)
- IT Oxidation catalysts
 Saponification catalysts
 (preparation of cyclic phenol sulfide-metal complexes, catalysts comprising same, and anal. methods for hydrogen peroxide)
- IT 9003-99-OP, Peroxidase
 RL: ARG (Analytical reagent use); CAT (Catalyst use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
 (artificial; preparation of cyclic phenol sulfide-metal complexes, catalysts comprising same, and anal. methods for hydrogen peroxide)
- IT 7722-84-1, Hydrogen peroxide, reactions
 RL: ANT (Analyte); RCT (Reactant); ANST (Analytical study); RACT (Reactant or reagent)
 (preparation of cyclic phenol sulfide-metal complexes, catalysts comprising same, and anal. methods for hydrogen peroxide)
- IT 7439-89-6DP, Iron, complex with thiacalix[4]arene derivative, preparation 7439-95-4DP, Magnesium, complex with thiacalix[4]arene derivative, preparation 7439-96-5DP, Manganese, complex with thiacalix[4]arene derivative, preparation 7440-39-3DP, Barium, complex with thiacalix[4]arene derivative, preparation 7440-45-1DP, Cerium, complex with thiacalix[4]arene derivative, preparation 7440-48-4DP, Cobalt, complex with thiacalix[4]arene derivative, preparation 9012-76-4DP, Chitosan, cerium-cyclic phenol sulfide complex supported on 182496-55-5DP, complex with cobalt 182496-55-5DP, complex with iron 182496-55-5DP, complex with manganese 204190-47-6DP, complex with barium 204190-47-6DP, complex with magnesium 211561-04-5DP, complex with cerium 211561-04-5DP, complex with cerium, supported on DEAE cellulofine A-500 211561-04-5DP, complex with cerium, supported on DEAE cellulofine-sf 211561-04-5DP, complex with cerium, supported on chitosan 211561-04-5DP, complex with iron 211561-04-5DP, complex with iron, supported on DEAE cellulofine-sf
 RL: ARG (Analytical reagent use); CAT (Catalyst use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
 (preparation of cyclic phenol sulfide-metal complexes, catalysts comprising same, and anal. methods for hydrogen peroxide)
- IT 98-54-4, 4-tert-Butylphenol 4043-96-3, Sodium bis(p-nitrophenyl)phosphate 7487-88-9, Magnesium sulfate, reactions 7646-79-9, Cobalt(II) chloride, reactions 7758-94-3, Iron(II) chloride 7773-01-5, Manganese(II) chloride 7783-85-9, Diammonium iron(II) sulfate

hexahydrate 9012-76-4, Chitosan 10139-51-2, Ceric ammonium nitrate 14760-23-7, Bis(bis(trimethylsilyl)amido)cobalt 17194-00-2, Barium hydroxide

RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of cyclic phenol sulfide-metal complexes, catalysts comprising same, and anal. methods for hydrogen peroxide)

IT 182496-55-5P 204190-47-6P 211561-04-5DP,
supported on DEAE cellulofine-sf 211561-04-5P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation of cyclic phenol sulfide-metal complexes, catalysts comprising same, and anal. methods for hydrogen peroxide)

RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Cosmo Research Institute; JP 09227553 A 1997 HCAPLUS
- (2) Cosmo Research Institute; JP 1077281 A 1998
- (3) Cosmo Research Institute; JP 1077282 A 1998
- (4) Cosmo Research Institute; WO 9929683 A1 1999 HCAPLUS
- (5) Iki, N; Bull Chem Soc Jpn 1998, V71(7), P1597 HCAPLUS
- (6) Iki, N; Chem Lett 1998, 7, P625 HCAPLUS
- (7) Iki, N; Tetrahedron Lett 1998, V39(41), P7559 HCAPLUS

IT 7722-84-1, Hydrogen peroxide, reactions

RL: ANT (Analyte); RCT (Reactant); ANST (Analytical study); RACT (Reactant or reagent)

(preparation of cyclic phenol sulfide-metal complexes, catalysts comprising same, and anal. methods for hydrogen peroxide)

RN 7722-84-1 HCAPLUS

CN Hydrogen peroxide (H2O2) (9CI) (CA INDEX NAME)

HO--OH

IT 7439-89-6DP, Iron, complex with thiacalix[4]arene derivative, preparation 7439-95-4DP, Magnesium, complex with thiacalix[4]arene derivative, preparation 7439-96-5DP, Manganese, complex with thiacalix[4]arene derivative, preparation 7440-39-3DP, Barium, complex with thiacalix[4]arene derivative, preparation 7440-45-1DP, Cerium, complex with thiacalix[4]arene derivative, preparation 7440-48-4DP, Cobalt, complex with thiacalix[4]arene derivative, preparation 182496-55-5DP, complex with cobalt 204190-47-6DP, complex with barium 211561-04-5DP, complex with cerium

RL: ARG (Analytical reagent use); CAT (Catalyst use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(preparation of cyclic phenol sulfide-metal complexes, catalysts comprising same, and anal. methods for hydrogen peroxide)

RN 7439-89-6 HCAPLUS

CN Iron (7CI, 8CI, 9CI) (CA INDEX NAME)

Fe

RN 7439-95-4 HCAPLUS

CN Magnesium (8CI, 9CI) (CA INDEX NAME)

Mg

RN 7439-96-5 HCAPLUS
 CN Manganese (8CI, 9CI) (CA INDEX NAME)

Mn

RN 7440-39-3 HCAPLUS
 CN Barium (8CI, 9CI) (CA INDEX NAME)

Ba

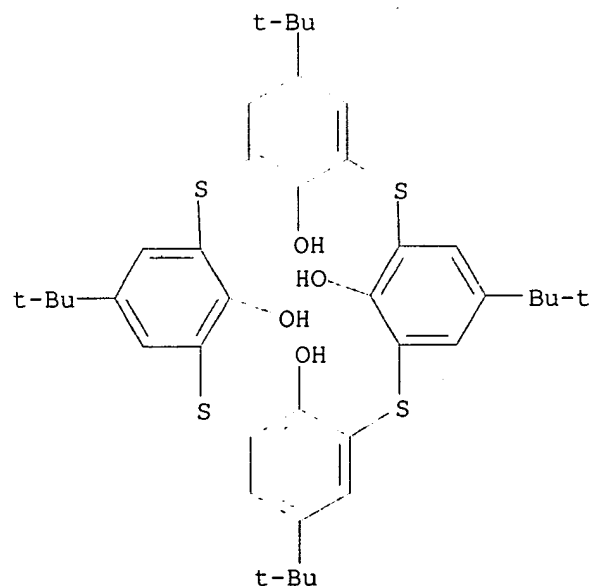
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 CN Cerium (8CI, 9CI) (CA INDEX NAME)

Ce

RN 7440-48-4 HCAPLUS
 CN Cobalt (8CI, 9CI) (CA INDEX NAME)

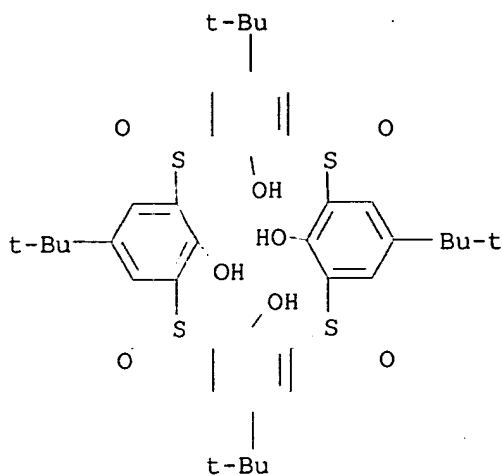
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RN 182496-55-5 HCAPLUS
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 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-
 tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)

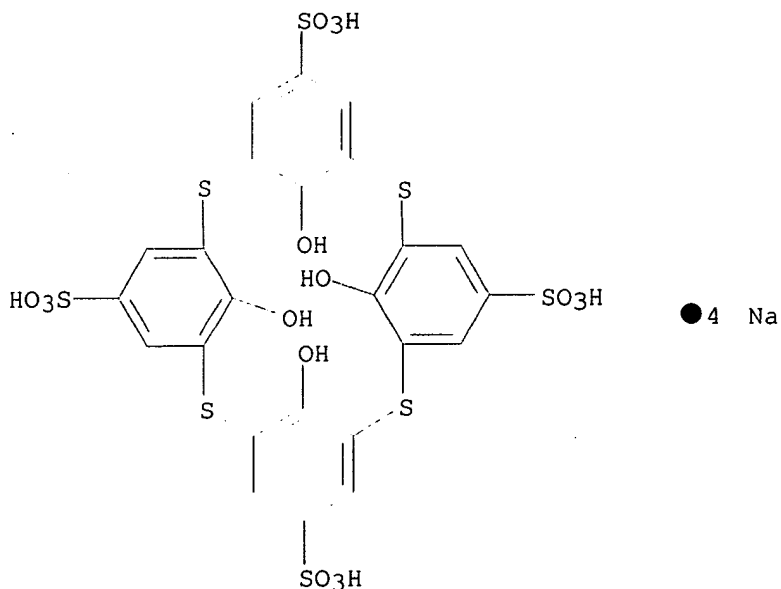


RN 204190-47-6 HCAPLUS
 CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-
 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-

tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)-, 2,8,14,20-tetraoxide
(9CI) (CA INDEX NAME)



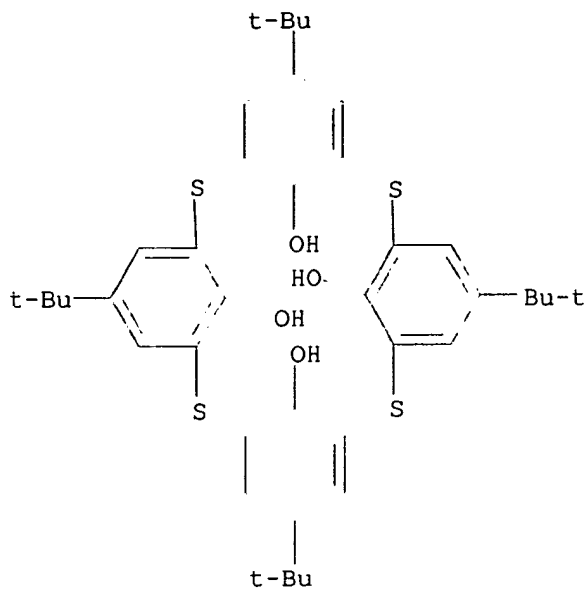
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CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-5,11,17,23-tetrasulfonic acid, 25,26,27,28-tetrahydroxy-, tetrasodium salt (9CI) (CA INDEX NAME)



IT 182496-55-5P 204190-47-6P 211561-04-5DP,
supported on DEAE cellulofine-sf 211561-04-5P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
(Reactant or reagent)
(preparation of cyclic phenol sulfide-metal complexes,
catalysts comprising same, and anal. methods for hydrogen
peroxide)

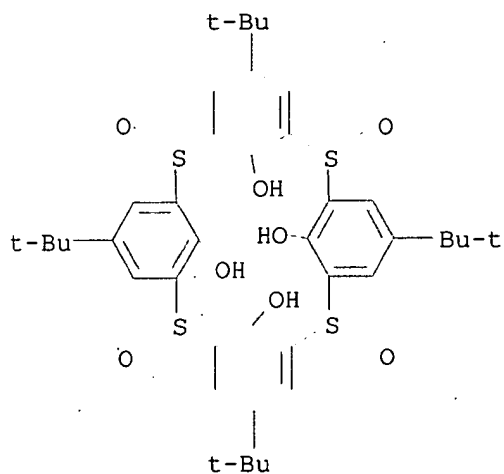
RN 182496-55-5 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-

tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



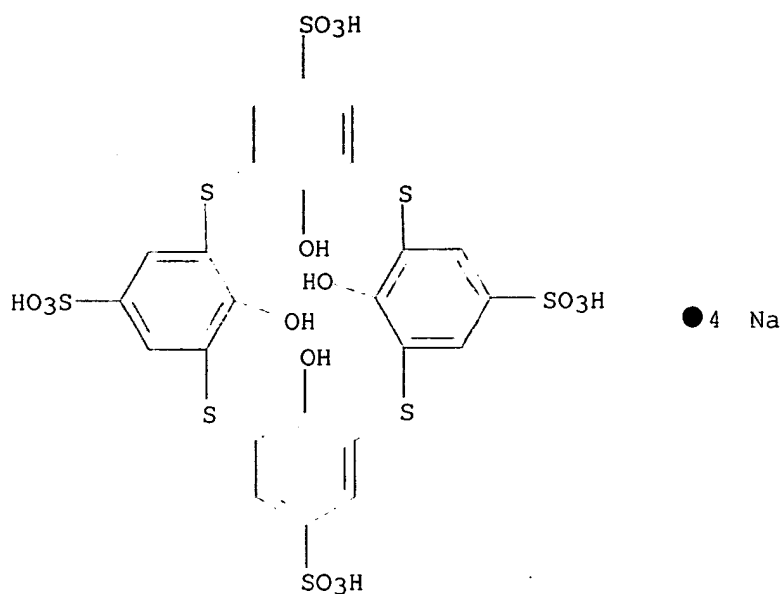
RN 204190-47-6 HCAPLUS

CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacos-
1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-
tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)-, 2,8,14,20-tetraoxide
(9CI) (CA INDEX NAME)

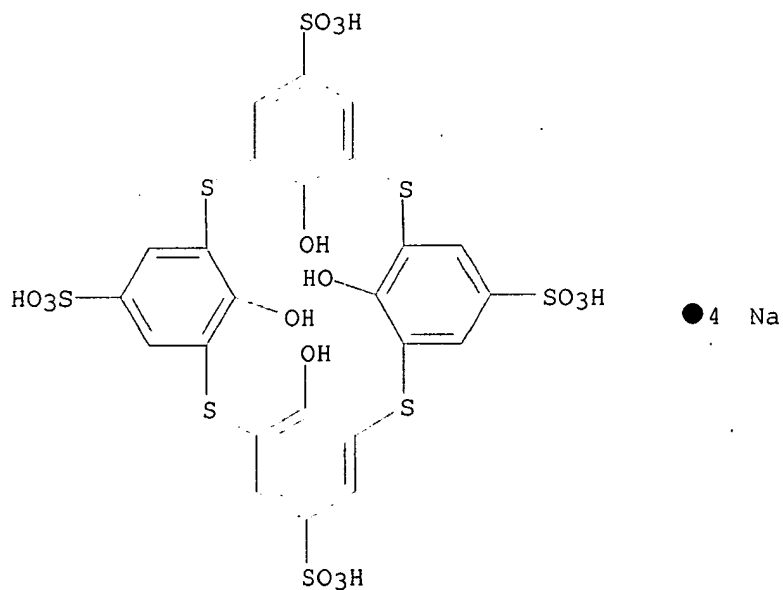


RN 211561-04-5 HCAPLUS

CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacos-
1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-5,11,17,23-
tetrasulfonic acid, 25,26,27,28-tetrahydroxy-, tetrasodium salt (9CI) (CA
INDEX NAME)



RN 211561-04-5 HCAPLUS
 CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosal-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-5,11,17,23-tetrasulfonic acid, 25,26,27,28-tetrahydroxy-, tetrasodium salt (9CI) (CA INDEX NAME)

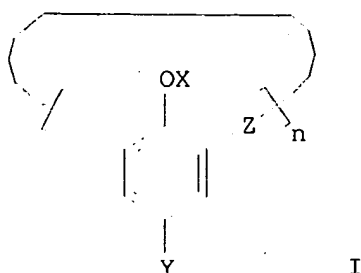


L58 ANSWER 7 OF 16 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 2000:249577 HCAPLUS
 DN 132:296459
 ED Entered STN: 19 Apr 2000
 TI Agent containing cyclic phenol sulfide for solvent extraction of **metals** and extraction method using it
 IN Miyano, Sotaro; Iki, Nobuhiko; Morohashi, Naoya; Sugawara, Atsushi; Miyanari, Setsuko; Kumagaya, Hitoshi

PA Cosmo Sogo Kenkyusho K. K., Japan; Cosmo Oil Co., Ltd.
 SO Jpn. Kokai Tokkyo Koho, 10 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM B01D011-04
 ICS C09K003-00; C07D341-00
 CC 54-3 (Extractive Metallurgy)
 Section cross-reference(s): 25

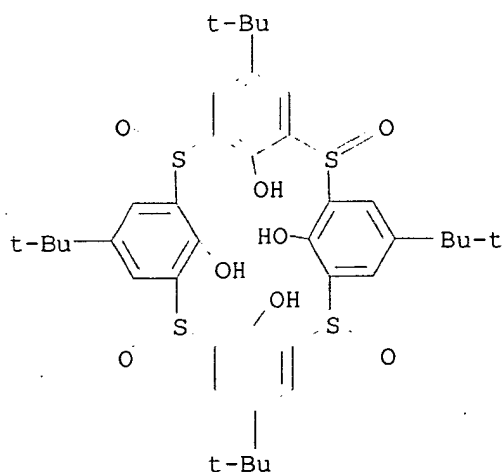
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000107505	A2	20000418	JP 1999-62375	19990309 <--
PRAI	JP 1998-233484		19980806 <--		
OS	MARPAT 132:296459				
GI					

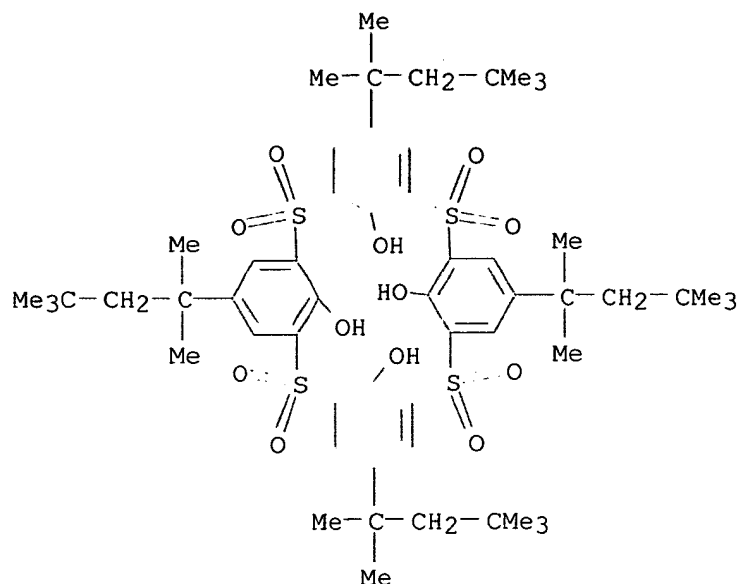


- AB The title agent for extraction of alkali **metals**, alkaline earth **metals**, and Group IIIA elements contains cyclic phenol sulfides I (X = H, hydrocarbyl, acyl, carboxyalkyl, carbamoylalkyl; Y = hydrocarbyl; Z = sulfinyl, sulfonyl; n = 4-8). The method for extraction of alkali **metals**, alkaline earth **metals**, and Group IIIA elements by using the agent is also claimed. Also claimed is another extraction method by using the agent and/or a transition **metal**-extracting agent made of cyclic phenol sulfides I in which Z is sulfide for selectively extracting alkali **metals**, alkaline earth **metals**, and Group IIIA elements and/or transition **metals** from mixture solns. Objective **metals** can be selectively extracted in high efficiency by using the agents.
- ST alkali **metal** solvent extn cyclic phenol sulfide; alk earth **metal** solvent extn cyclic phenol sulfide; Group IIIA element solvent extn cyclic phenol sulfide
- IT Solvent extraction
 (solvent extraction of alkali **metal**, alkaline earth **metal**, and Group IIIA element by using agent containing cyclic phenol sulfide)
- IT Alkali **metals**, preparation
 Alkaline earth **metals**
 Group IIIA elements
 RL: PUR (Purification or recovery); PREP (Preparation)
 (solvent extraction of alkali **metal**, alkaline earth **metal**, and Group IIIA element by using agent containing cyclic phenol sulfide)
- IT 204190-47-6P 215511-22-1P
 RL: IMF (Industrial manufacture); NUU (Other use, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (solvent extraction of alkali **metal**, alkaline earth **metal**, and Group IIIA element by using agent containing cyclic phenol sulfide)
- IT 182496-55-5P

- RL: NUU (Other use, unclassified); PNU (Preparation, unclassified); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(solvent extraction of alkali **metal**, alkaline earth **metal**, and Group IIIA element by using agent containing cyclic phenol sulfide)
- IT 68959-11-5 69103-69-1
RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)
(solvent extraction of alkali **metal**, alkaline earth **metal**, and Group IIIA element by using agent containing cyclic phenol sulfide)
- IT 182496-64-6P
RL: PNU (Preparation, unclassified); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(solvent extraction of alkali **metal**, alkaline earth **metal**, and Group IIIA element by using agent containing cyclic phenol sulfide)
- IT 7429-90-5P, Aluminum, preparation 7440-09-7P, Potassium, preparation 7440-66-6P, Zinc, preparation 7440-70-2P, Calcium, preparation 7786-30-3P, Magnesium chloride, preparation 10043-52-4P, Calcium chloride, preparation 10361-37-2P, Barium chloride, preparation
RL: PUR (Purification or recovery); PREP (Preparation)
(solvent extraction of alkali **metal**, alkaline earth **metal**, and Group IIIA element by using agent containing cyclic phenol sulfide)
- IT 98-54-4, 4-tert-Butylphenol 140-66-9, 4-tert-Octylphenol 7704-34-9, Sulfur, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(solvent extraction of alkali **metal**, alkaline earth **metal**, and Group IIIA element by using agent containing cyclic phenol sulfide)
- IT 204190-47-6P 215511-22-1P
RL: IMF (Industrial manufacture); NUU (Other use, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(solvent extraction of alkali **metal**, alkaline earth **metal**, and Group IIIA element by using agent containing cyclic phenol sulfide)
- RN 204190-47-6 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosal-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)-, 2,8,14,20-tetraoxide (9CI) (CA INDEX NAME)



- RN 215511-22-1 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosal-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1,3,3-tetramethylbutyl)-, 2,2,8,8,14,14,20,20-octaoxide (9CI) (CA INDEX NAME)

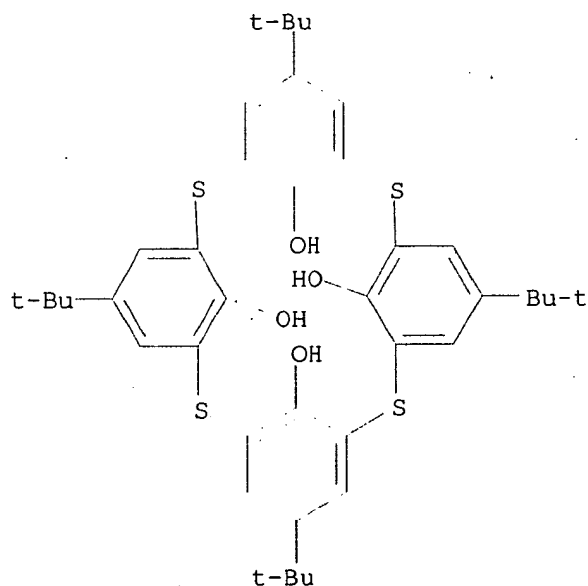


IT 182496-55-5P

RL: NUU (Other use, unclassified); PNU (Preparation, unclassified); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(solvent extraction of alkali **metal**, alkaline earth **metal**,
and Group IIIA element by using agent containing cyclic phenol sulfide)

RN 182496-55-5 HCAPLUS

CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacos-
1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-
tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME).



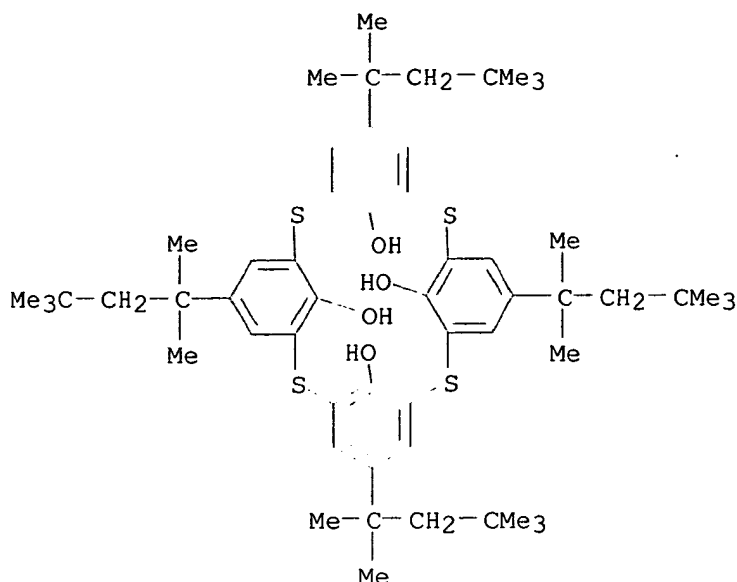
IT 182496-64-6P

RL: PNU (Preparation, unclassified); RCT (Reactant); PREP (Preparation);
RACT (Reactant or reagent)
(solvent extraction of alkali **metal**, alkaline earth **metal**,

and Group IIIA element by using agent containing cyclic phenol sulfide)

RN 182496-64-6 HCAPLUS

CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacos-
1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-
tetrol, 5,11,17,23-tetrakis(1,1,3,3-tetramethylbutyl)- (9CI) (CA INDEX
NAME)



IT 7440-09-7P, Potassium, preparation 7440-66-6P, Zinc,
preparation 7440-70-2P, Calcium, preparation
RL: PUR (Purification or recovery); PREP (Preparation)
(solvent extraction of alkali metal, alkaline earth metal,
and Group IIIA element by using agent containing cyclic phenol sulfide)

RN 7440-09-7 HCAPLUS

CN Potassium (8CI, 9CI) (CA INDEX NAME)

K

RN 7440-66-6 HCAPLUS

CN Zinc (7CI, 8CI, 9CI) (CA INDEX NAME)

Zn

RN 7440-70-2 HCAPLUS

CN Calcium (8CI, 9CI) (CA INDEX NAME)

Ca

L58 ANSWER 8 OF 16 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2000:181026 HCAPLUS

DN 132:207853

ED Entered STN: 21 Mar 2000

TI Agents and method for extraction of porphyrins and their cyclic phenol

sulfide complexes

IN Segawa, Hiroshi; Hirakawa, Kazutaka; Takeya, Haruhiko; Kumagaya, Hitoshi
 PA Cosmo Sogo Kenkyusho K. K., Japan; Cosmo Oil Co., Ltd.
 SO Jpn. Kokai Tokkyo Koho, 7 pp.
 CODEN: JKXXAF

DT Patent

LA Japanese

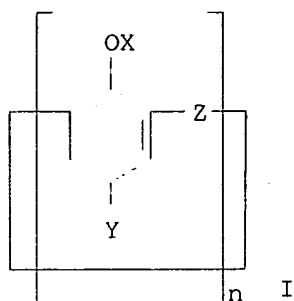
IC ICM C07D341-00

ICS C07D487-22; C07B063-02

CC 28-23 (Heterocyclic Compounds (More Than One Hetero Atom))
 Section cross-reference(s): 26

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000080093	A2	20000321	JP 1998-262271	19980902 <--
PRAI	JP 1998-262271		19980902 <--		
OS	MARPAT 132:207853				
GI					



AB Title agents comprise cyclic phenol sulfides I (X = H, hydrocarbyl, acyl; ≥ 1 X = H; Y = H, hydrocarbyl, halohydrocarbyl, halo, acyl, OH, etc.; Z = sulfido, sulfinyl, sulfonyl; n = 4-8). 4-Tert-butylphenol (45.2 g) was reacted with S in the presence of NaOH at $\leq 230^\circ$ for 6 h to give 4.32 g I (X = H, Y = t-Bu, Z = S, n = 4). Tetrakis(4-N-methylpyridinium)porphyrin was extracted with CH₂Cl₂ containing I (X = H, Y = t-Bu, Z = S, n = 4).

ST porphyrin extn cyclic phenol sulfide; **complex** porphyrin cyclic phenol sulfide

IT Extractants

(extraction of porphyrin with their cyclic phenol sulfides)

IT **Metalloporphyrins**

RL: PUR (Purification or recovery); PREP (Preparation)

(extraction of porphyrin with their cyclic phenol sulfides)

IT Cyclophanes

RL: RCT (Reactant); RACT (Reactant or reagent)

(extraction of porphyrin with their cyclic phenol sulfides)

IT 48242-70-2P

RL: PUR (Purification or recovery); PREP (Preparation)

(48242-70-2; extraction of porphyrin with their cyclic phenol sulfides)

IT 182496-55-5P

RL: NUU (Other use, unclassified); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
 (extraction of porphyrin with their cyclic phenol sulfides)

IT 38673-65-3P 40603-58-5P 69458-19-1P 79619-74-2P

RL: PUR (Purification or recovery); PREP (Preparation)

(extraction of porphyrin with their cyclic phenol sulfides)

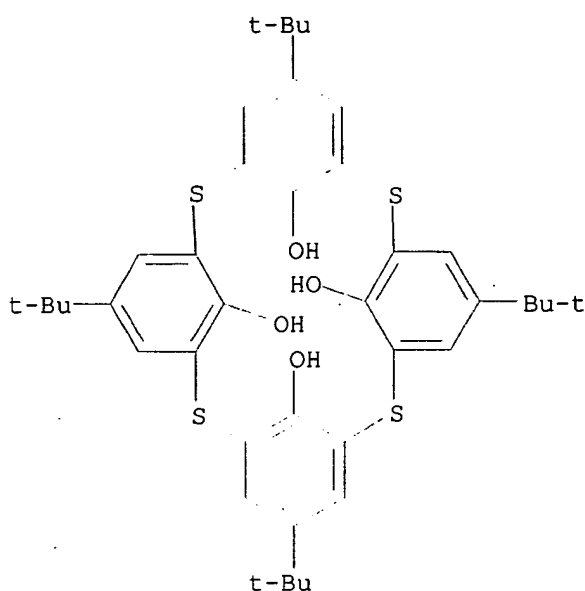
IT 98-54-4, 4-tert-Butylphenol
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (extraction of porphyrin with their cyclic phenol sulfides)

IT 260449-08-9P
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (extraction of porphyrin with their cyclic phenol sulfides)

IT 182496-55-5P
 RL: NUU (Other use, unclassified); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
 (extraction of porphyrin with their cyclic phenol sulfides)

RN 182496-55-5 HCAPLUS

CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosal(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



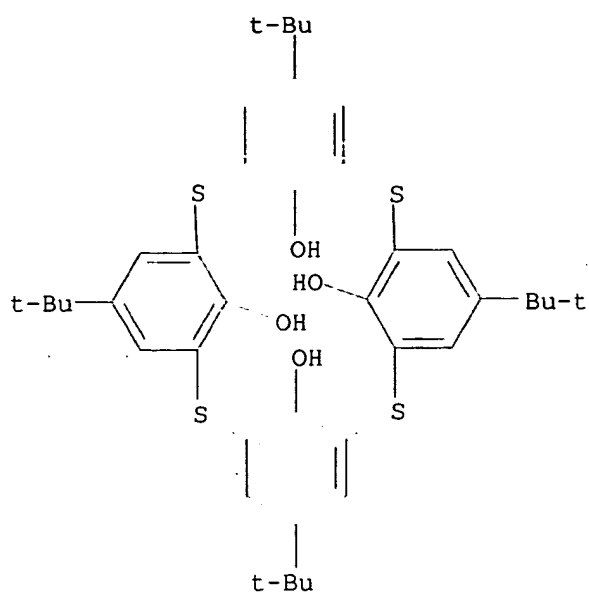
IT 260449-08-9P
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (extraction of porphyrin with their cyclic phenol sulfides)

RN 260449-08-9 HCAPLUS

CN Zinc(4+), [[4,4',4'',4'''-(21H,23H-porphine-5,10,15,20-tetrayl-κN21,κN22,κN23,κN24)tetrakis[1-methylpyridiniumato]](2-)]-, (SP-4-1)-, compd. with 5,11,17,23-tetrakis(1,1-dimethylethyl)-2,8,14,20-tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosal(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 182496-55-5
 CMF C40 H48 O4 S4



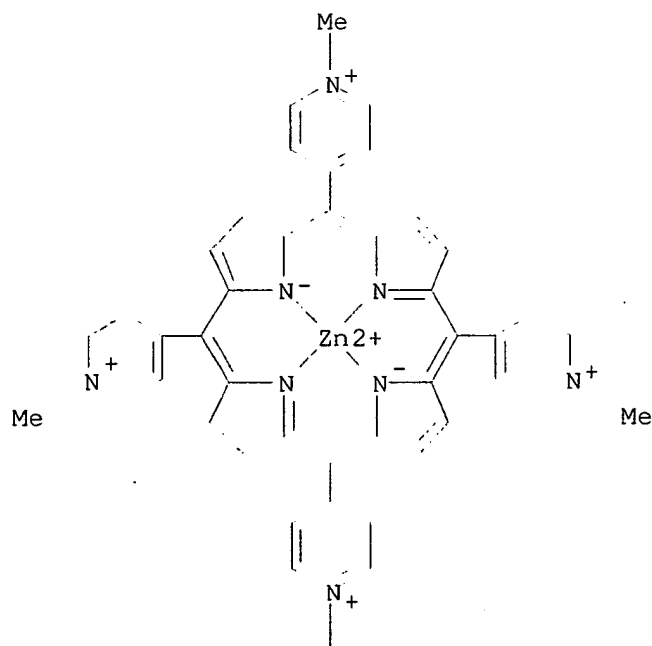
CM 2

CRN 40603-58-5

CMF C44 H36 N8 Zn

CCI CCS

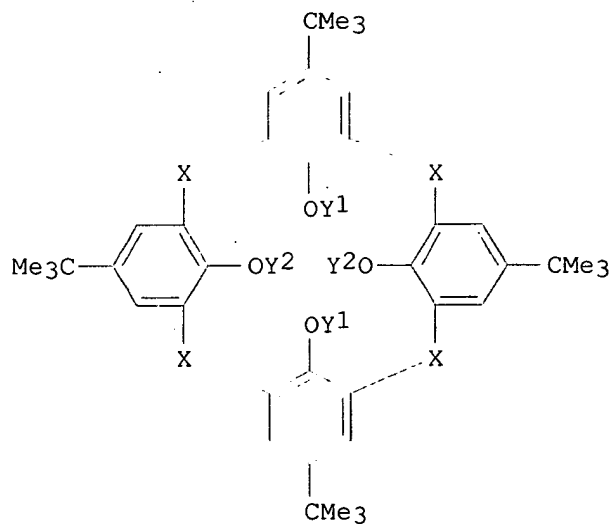
PAGE 1-A



PAGE 2-A

Me

L58 ANSWER 9 OF 16 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 1999:655205 HCAPLUS
 DN 132:35686
 ED Entered STN: 15 Oct 1999
 TI Novel molecular receptors based on a thiacalix[4]arene platform.
 Preparations of the di- and tetracarboxylic acid derivatives and their
 binding properties towards transition metal ions
 AU Iki, Nobuhiko; Morohashi, Naoya; Narumi, Fumitaka; Fujimoto, Toyohisa;
 Suzuki, Tomohiro; Miyano, Sotaro
 CS Department of Biomolecular Engineering, Graduate School of Engineering,
 Tohoku University, Sendai, 980-8579, Japan
 SO Tetrahedron Letters (1999), 40(41), 7337-7341
 CODEN: TELEAY; ISSN: 0040-4039
 PB Elsevier Science Ltd.
 DT Journal
 LA English
 CC 28-23 (Heterocyclic Compounds (More Than One Hetero Atom))
 Section cross-reference(s): 79
 GI



AB Novel mol. receptors, cone- and 1,3-alternate-tetracarboxylic acid (I; X = S, Y1 = Y2 = CH₂COOH) and syn-A,C-dicarboxylic acid (I; X = S, Y1 = CH₂COOH, Y2 = H), were prepared by hydrolysis of the ester moiety of the tetra- (I; X = S, Y1 = Y2 = CH₂COOEt) and diethers (I; X = S, Y1 = CH₂COOEt, Y2 = H), obtained by regio- and conformation-selective O-alkylation of the phenolic oxygens of thiacalix[4]arene (I; X = S, Y1 = Y2 = H) with Et bromoacetate. The binding ability of cone- and 1,3-alternate-I (X = S, Y1 = Y2 = CH₂COOH), syn-I (X = S, Y1 = CH₂COOH, Y2 = H), as well as cone-shaped, methylene-bridged tetracarboxylic acid (I; X = CH₂, Y1 = Y2 = CH₂COOH) toward transition metal ions was investigated by solvent extraction and showed that the selectivity for the ions

depends upon the bridging sulfur, carboxylate group, and the conformation.

ST thiocalixarene dicarboxylic tetracarboxylic acid prepn
complexation metal; extn **metal ion**
thiocalixarene dicarboxylic tetracarboxylic acid

IT Transition **metals**, preparation
RL: ANT (Analyte); PUR (Purification or recovery); ANST (Analytical study); PREP (Preparation)
(ions; extraction by thiocalix[4]arene di- and tetracarboxylic acids)

IT Extraction
(of transition **metal** ions by thiocalix[4]arene di- and tetracarboxylic acids)

IT 105-36-2, Ethyl bromoacetate
RL: RCT (Reactant); RACT (Reactant or reagent)
(etherification of thiocalixarene by)

IT 14701-22-5P, Nickel(2+), preparation 15158-11-9P, Copper(2+), preparation 20074-52-6P, Iron(3+), preparation 22541-53-3P, Cobalt(2+), preparation 23713-49-7P, Zinc(2+), preparation
RL: ANT (Analyte); PUR (Purification or recovery); ANST (Analytical study); PREP (Preparation)
(extraction by thiocalix[4]arene di- and tetracarboxylic acids)

IT 113215-72-8 182496-55-5
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(extraction of transition **metal** ions by)

IT 252253-24-0 252287-26-6
RL: RCT (Reactant); RACT (Reactant or reagent)
(hydrolysis of)

IT 209472-17-3P 252287-27-7P 252287-36-8P
RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(preparation and extraction of transition **metal** ions by)

RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Akdas, H; Tetrahedron Lett 1999, V40, P2113 HCAPLUS
- (2) Araki, K; Chem Lett 1989, P1747 HCAPLUS
- (3) Iki, N; Bull Chem Soc Jpn 1998, V71, P1597 HCAPLUS
- (4) Iki, N; Chem Lett 1998, P1065 HCAPLUS
- (5) Iki, N; Chem Lett 1998, P625 HCAPLUS
- (6) Iki, N; Chem Lett 1999, P219 HCAPLUS
- (7) Iki, N; J Chem Soc Perkin Trans 2 1998, P2745 HCAPLUS
- (8) Iwamoto, K; Chem Lett 1991, P473 HCAPLUS
- (9) Kumagai, H; Tetrahedron Lett 1997, V38, P3971 HCAPLUS
- (10) Narumi, F; Enantiomer in press
- (11) Ogata, M; J Am Chem Soc 1994, V116, P4505 HCAPLUS

IT 14701-22-5P, Nickel(2+), preparation 15158-11-9P, Copper(2+), preparation 20074-52-6P, Iron(3+), preparation 22541-53-3P, Cobalt(2+), preparation 23713-49-7P, Zinc(2+), preparation
RL: ANT (Analyte); PUR (Purification or recovery); ANST (Analytical study); PREP (Preparation)
(extraction by thiocalix[4]arene di- and tetracarboxylic acids)

RN 14701-22-5 HCAPLUS

CN Nickel, ion (Ni2+) (8CI, 9CI) (CA INDEX NAME)

Ni2+

RN 15158-11-9 HCAPLUS

CN Copper, ion (Cu2+) (8CI, 9CI) (CA INDEX NAME)

Cu²⁺

RN 20074-52-6 HCAPLUS
 CN Iron, ion (Fe³⁺) (8CI, 9CI) (CA INDEX NAME)

Fe³⁺

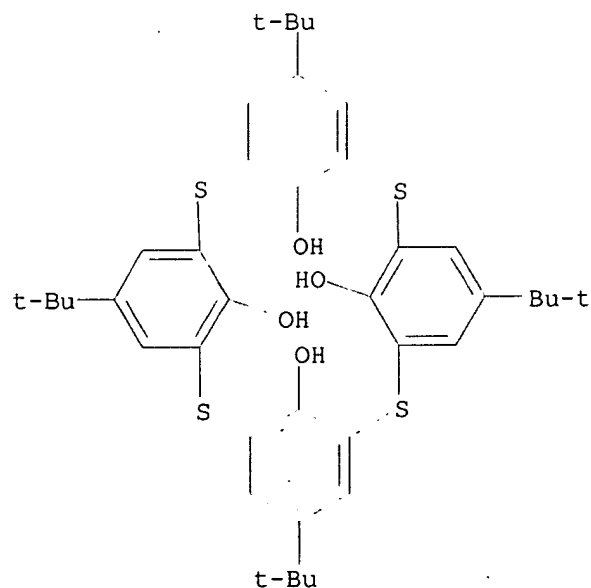
RN 22541-53-3 HCAPLUS
 CN Cobalt, ion (Co²⁺) (8CI, 9CI) (CA INDEX NAME)

Co²⁺

RN 23713-49-7 HCAPLUS
 CN Zinc, ion (Zn²⁺) (8CI, 9CI) (CA INDEX NAME)

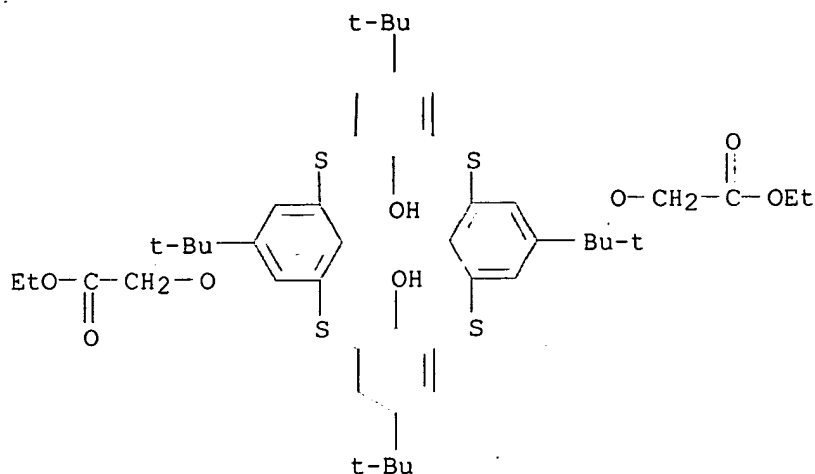
Zn²⁺

IT 182496-55-5
 RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
 (extraction of transition metal ions by)
 RN 182496-55-5 HCAPLUS
 CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacos-
 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-
 tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)

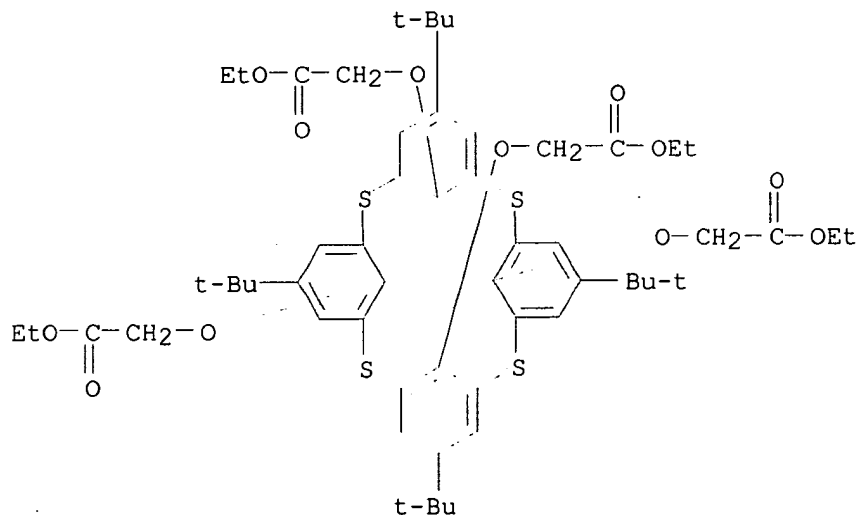


IT 252253-24-0 252287-26-6
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (hydrolysis of)
 RN 252253-24-0 HCAPLUS
 CN Acetic acid, 2,2'-[[5,11,17,23-tetrakis(1,1-dimethylethyl),26,28-dihydroxy-
 2,8,14,20-tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacos-

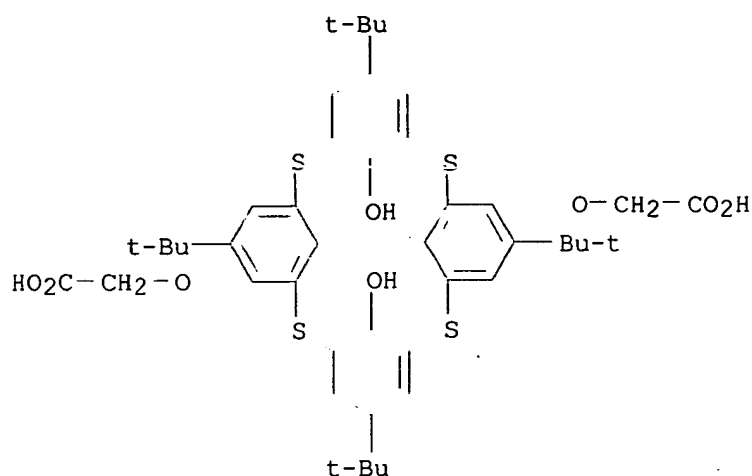
1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,27-diyl]bis(oxy)]bis-, diethyl ester (9CI) (CA INDEX NAME)



RN 252287-26-6 HCAPLUS
 CN Acetic acid, 2,2',2'',2'''-[[5,11,17,23-tetrakis(1,1-dimethylethyl)-2,8,14,20-tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacos-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrayl]tetrakis(oxy)]tetrakis-, tetraethyl ester (9CI) (CA INDEX NAME)

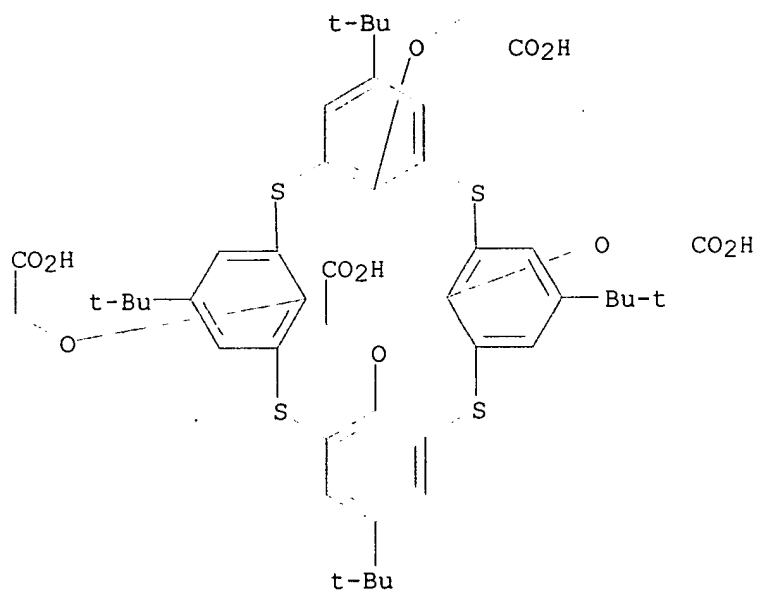


IT 209472-17-3P 252287-27-7P 252287-36-8P
 RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
 (preparation and extraction of transition metal ions by)
 RN 209472-17-3 HCAPLUS
 CN Acetic acid, 2,2'-[[5,11,17,23-tetrakis(1,1-dimethylethyl)-26,28-dihydroxy-2,8,14,20-tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacos-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,27-diyl]bis(oxy)]bis- (9CI) (CA INDEX NAME)



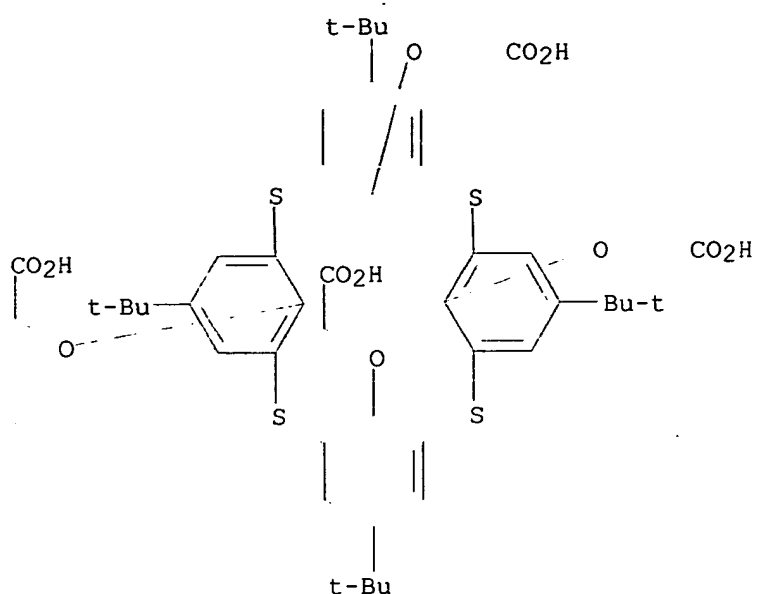
RN 252287-27-7 HCAPLUS

CN Acetic acid, 2,2',2'',2'''-[[5,11,17,23-tetrakis(1,1-dimethylethyl)-2,8,14,20-tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacos-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrayl]tetrakis(oxy)]tetrakis-, stereoisomer (9CI) (CA INDEX NAME)



RN 252287-36-8 HCAPLUS

CN Acetic acid, 2,2',2'',2'''-[[5,11,17,23-tetrakis(1,1-dimethylethyl)-2,8,14,20-tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacos-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrayl]tetrakis(oxy)]tetrakis-, stereoisomer (9CI) (CA INDEX NAME)



L58 ANSWER 10 OF 16 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 1999:83382 HCAPLUS

DN 130:223254

ED Entered STN: 09 Feb 1999

TI Tetrasulfinylcalix[4]arenes: synthesis and solid state structural analysis

AU Mislin, Gilles; Graf, Ernest; Hosseini, Mir Wais; De Cian, Andre; Fischer, Jean

CS Laboratoire de Chimie de Coordination Organique, associe au CNRS, Universite Louis Pasteur, Institut Le Bel, Strasbourg, F-67000, Fr.

SO Tetrahedron Letters (1999), 40(6), 1129-1132

CODEN: TELEAY; ISSN: 0040-4039

PB Elsevier Science Ltd.

DT Journal

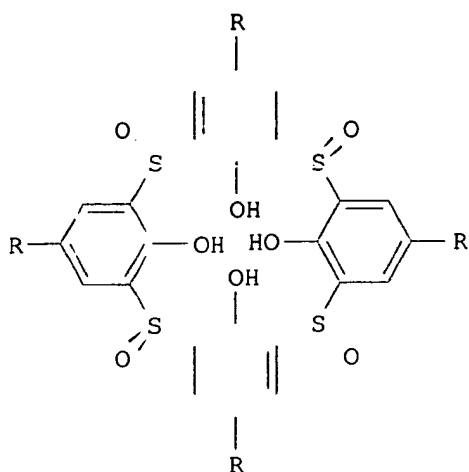
LA English

CC 28-23 (Heterocyclic Compounds (More Than One Hetero Atom))

Section cross-reference(s): 75

OS CASREACT 130:223254

GI



- AB The synthesis of two tetrasulfinylcalix[4]arene sulfoxides I (R = H, Me3C) was achieved by partial oxidation of tetrathiacalix[4]arene precursors. E.g., I (R = H) was prepared in 28% yield by oxidation of tetrathiatetrahydroxycalix[4]arene with H2O2 in glacial acetic acid. X-ray crystallog. of I (R = H, Me3C) indicated that I was prepared as a single stereoisomer and was found preferentially in the 1,3-alternate conformer. I (R = H) forms a 3-D network based on stacking interactions between aromatic groups of neighboring calixarenes in the crystal.
- ST sulfinylcalixarene crystal structure prepn; stereoselective partial oxidn thiacalixarene; solid state structure analysis sulfinylcalixarene stereoisomer conformer; network stacking interaction sulfinylcalixarene crystal
- IT Crystal structure
(of tetrasulfinylcalixarenes)
- IT Stereochemistry
(stereoselective preparation and crystal structures of tetrasulfinylcalixarenes)
- IT Metacyclophanes
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(stereoselective preparation and crystal structures of tetrasulfinylcalixarenes)
- IT 221098-83-5
RL: PRP (Properties)
(crystal structure of a tetrasulfinylcalixarene)
- IT 221098-82-4P
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(stereoselective preparation and crystal structures of tetrasulfinylcalixarenes)
- IT 182496-55-5 182496-69-1
RL: RCT (Reactant); RACT (Reactant or reagent)
(stereoselective preparation and crystal structures of tetrasulfinylcalixarenes)
- IT 221098-81-3P
RL: SPN (Synthetic preparation); PREP (Preparation)
(stereoselective preparation and crystal structures of tetrasulfinylcalixarenes)

RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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- (2) Bohmer, V; Angew Chem Int Ed Engl 1995, V34, P713
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- (11) Mislin, G; J Chem Soc Chem Commun 1998, P1345 HCAPLUS
- (12) Sone, T; Tetrahedron Lett 1997, V38, P10689

IT 221098-83-5

RL: PRP (Properties)

(crystal structure of a tetrasulfinylcalixarene)

RN 221098-83-5 HCAPLUS

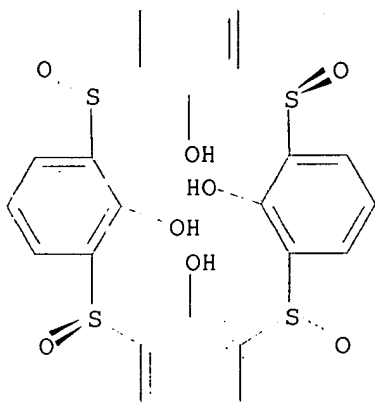
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacos-
 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-
 tetrol, 2,8,14,20-tetraoxide, stereoisomer, compd. with dichloromethane
 (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 221098-81-3

CMF C24 H16 O8 S4

Relative stereochemistry.



CM 2

CRN 75-09-2

CMF C H2 Cl2

Cl-CH₂-Cl

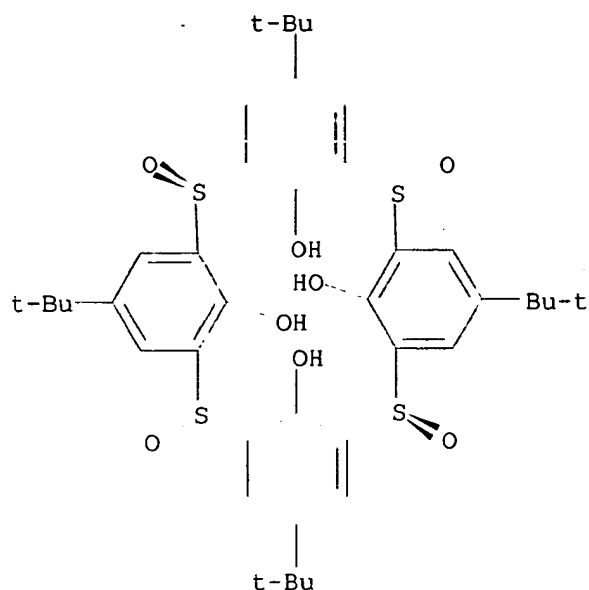
IT 221098-82-4P

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
 (stereoselective preparation and crystal structures of
 tetrasulfinylcalixarenes)

RN 221098-82-4 HCAPLUS

CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacos-
 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-
 tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)-, 2,8,14,20-tetraoxide,
 stereoisomer (9CI) (CA INDEX NAME)

Relative stereochemistry.



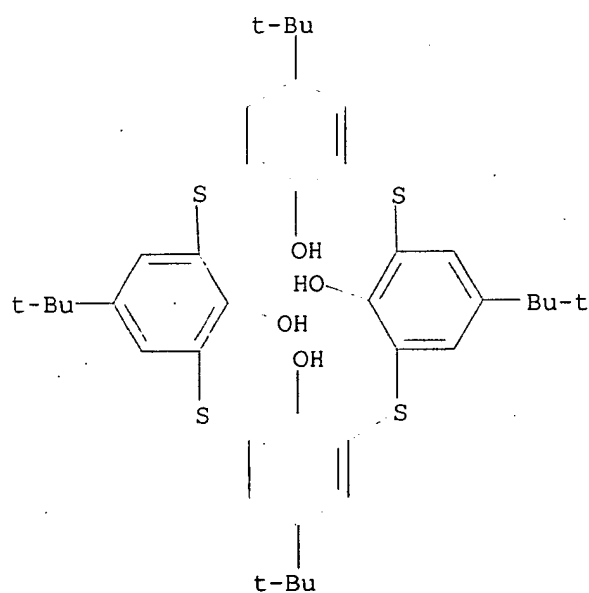
IT 182496-55-5 182496-69-1

RL: RCT (Reactant); RACT (Reactant or reagent)

(stereoselective preparation and crystal structures of
tetrasulfinylcalixarenes)

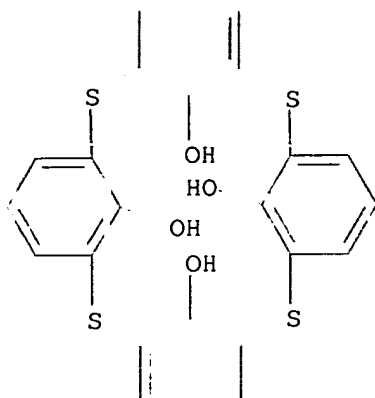
RN 182496-55-5 HCAPLUS

CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-
1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-
tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



RN 182496-69-1 HCAPLUS

CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-
1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-
tetrol (9CI) (CA INDEX NAME)



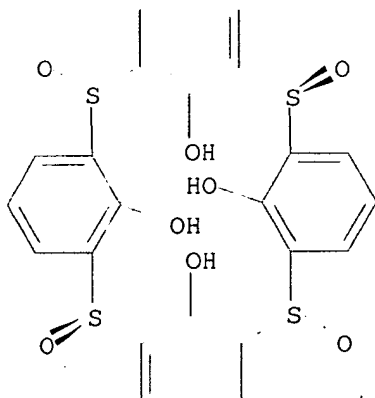
IT 221098-81-3P

RL: SPN (Synthetic preparation); PREP (Preparation)
(stereoselective preparation and crystal structures of
tetrasulfinylcalixarenes)

RN 221098-81-3 HCAPLUS

CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacos-
1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-
tetrol, 2,8,14,20-tetraoxide, stereoisomer (9CI) (CA INDEX NAME)

Relative stereochemistry.



L58 ANSWER 11 OF 16 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 1998:755348 HCAPLUS

DN 130:182438

ED Entered STN: 02 Dec 1998

TI Selective synthesis of three conformational isomers of
tetrakis[(ethoxycarbonyl)methoxy]thiacalix[4]arene and their
complexation properties towards alkali metal ions

AU Iki, Nobuhiko; Narumi, Fumitaka; Fujimoto, Toyohisa; Morohashi, Naoya;
Miyano, Sotaro

CS Graduate School of Engineering, Department of Biomolecular Engineering,
Tohoku University, Aoba-ku, Sendai, 980-8579, Japan

SO Journal of the Chemical Society, Perkin Transactions 2: Physical Organic
Chemistry (1998), (12), 2745-2750
CODEN: JCPKBH; ISSN: 0300-9580

PB Royal Society of Chemistry
 DT Journal
 LA English
 CC 28-23 (Heterocyclic Compounds (More Than One Hetero Atom))
 Section cross-reference(s): 22, 75
 AB 5,11,17,23-Tetra-tert-butyl-2,8,14,20-tetrathiacalix[4]arene-25,26,27,28-tetrol (TCA) underwent facile tetra-O-alkylation by treatment with Et bromoacetate in the presence of an alkali carbonate as base catalyst in DMF or acetone to provide a mixture of conformational isomers (cone, partial cone, and 1,3-alternate) of 5,11,17,23-tetra-tert-butyl-25,26,27,28-tetrakis[(ethoxycarbonyl)methoxy]-2,8,14,20-tetrathiacalix[4]arene (I), the stereochem. of which were unambiguously assigned by 1H NMR and X-ray anal. The isomer distribution depended significantly on the base used, thus providing a facile route for the preparation of a particular conformer; Na2CO3, K2CO3, and Cs2CO3 gave cone- (77% yield), partial-cone- (58% yield), and 1,3-alternate-I (78% yield) in acetone, resp. Cone- and partial-cone-I, in turn, showed preference for Na+ and K+, resp., in an ion-pair extraction study, while 1,3-alternate-I preferred most Rb+ ion, followed by K+ and then Cs+. These results imply that the size of the cavities provided by the (ethoxycarbonyl)methoxy groups arranged on the periphery of the thiacalix[4]arene skeleton is in the order cone- < partial-cone- < 1,3-alternate-I. The ion selectivity of cone-I was rather better than that of the methylene-bridged counterpart, 5,11,17,23-tetra-tert-butyl-25,26,27,28-tetrakis[(ethoxycarbonyl)methoxy]calix[4]arene. The stoichiometry of the complex of cone-I with Na+ ion was determined to be 1:1 with the stability constant of 102.85 mol-1 dm3 in 50 (volume/volume)% CDCl3-CD3OD.
 ST ethoxycarbonylmethoxy thiacalixarene prepn conformation conformer; crystal mol structure ethoxycarbonylmethoxy thiacalixarene prepn
 IT Crystal structure
 Molecular structure
 (preparation and properties of conformational isomers of tetrakis[(ethoxycarbonyl)methoxy]thiacalix[4]arene)
 IT **Complexation**
 Conformation
 Conformers
 (preparation of conformational isomers of tetrakis[(ethoxycarbonyl)methoxy]thiacalix[4]arene and their **complexation** properties towards alkali metal ions)
 IT 17341-24-1, reactions 17341-25-2, Sodium ion, reactions 18459-37-5, Cesium ion, reactions 22537-38-8, Rubidium ion, reactions 24203-36-9, Potassium ion, reactions
 RL: PRP (Properties); RCT (Reactant); RACT (Reactant or reagent)
 (preparation and properties of conformational isomers of tetrakis[(ethoxycarbonyl)methoxy]thiacalix[4]arene)
 IT 210706-03-9P 210780-04-4P 210780-05-5P
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
 (preparation of conformational isomers of tetrakis[(ethoxycarbonyl)methoxy]thiacalix[4]arene and their **complexation** properties towards alkali metal ions)
 IT 105-36-2, Ethyl bromoacetate 182496-55-5
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (preparation of conformational isomers of tetrakis[(ethoxycarbonyl)methoxy]thiacalix[4]arene and their **complexation** properties towards alkali metal ions)
 RE.CNT 38 THERE ARE 38 CITED REFERENCES AVAILABLE FOR THIS RECORD
 RE
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 (2) Araki, K; Chem Lett 1989, P1747 HCAPLUS
 (3) Arduini, A; J Chem Soc Chem Commun 1990, P1597 HCAPLUS
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- (8) Arnaud-Neu, F; J Chem Soc Perkin Trans 2 1997, P575 HCAPLUS
- (9) Beurskens, P; The DIRDIF program system Technical Report of the Crystallographic Laboratory 1992
- (10) Beurskens, P; The DIRDIF-94 program system, Technical Report of the Crystallography Laboratory 1994
- (11) Billah, M; Fresenius J Anal Chem 1993, V347, P107 HCAPLUS
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- (13) Connors, K; Binding Constants The Measurement of Molecular Complex Stability 1987
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- (37) Verboom, W; J Org Chem 1992, V57, P5394 HCAPLUS
- (38) Yamamoto, Y; Bunseki Kagaku 1972, V21, P418 HCAPLUS
- IT 17341-24-1, reactions 17341-25-2, Sodium ion, reactions 18459-37-5, Cesium ion, reactions 22537-38-8, Rubidium ion, reactions 24203-36-9, Potassium ion, reactions
 RL: PRP (Properties); RCT (Reactant); RACT (Reactant or reagent)
 (preparation and properties of conformational isomers of tetrakis[(ethoxycarbonyl)methoxy]thiacalix[4]arene)
- RN 17341-24-1 HCAPLUS
- CN Lithium, ion (Li1+) (8CI, 9CI) (CA INDEX NAME)

Li⁺

RN 17341-25-2 HCAPLUS
 CN Sodium, ion (Na1+) (8CI, 9CI) (CA INDEX NAME)

Na⁺

RN 18459-37-5 HCAPLUS
 CN Cesium, ion (Cs1+) (8CI, 9CI) (CA INDEX NAME)

Cs⁺

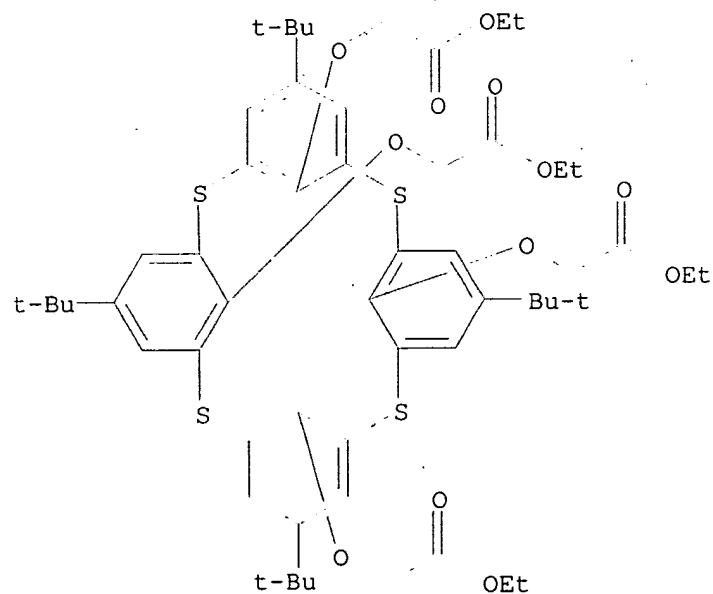
RN 22537-38-8 HCAPLUS
 CN Rubidium, ion (Rb1+) (8CI, 9CI) (CA INDEX NAME)

Rb⁺

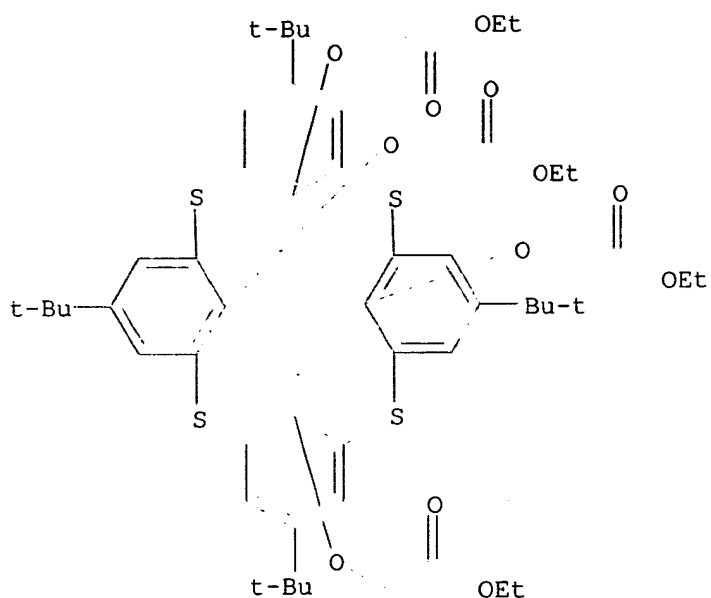
RN 24203-36-9 HCAPLUS
 CN Potassium, ion (K1+) (8CI, 9CI) (CA INDEX NAME)

K⁺

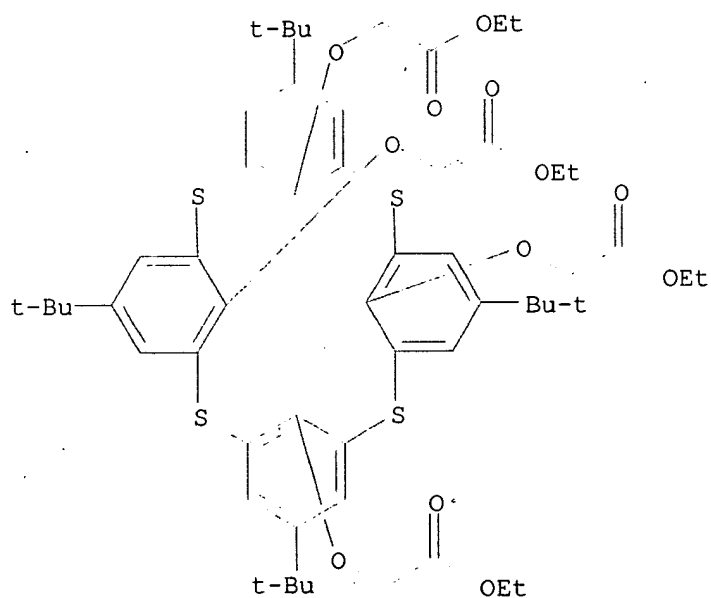
IT 210706-03-9P 210780-04-4P 210780-05-5P
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
 (preparation of conformational isomers of tetrakis[(ethoxycarbonyl)methoxy]t
 hiacalix[4]arene and their **complexation** properties towards
 alkali metal ions)
 RN 210706-03-9 HCAPLUS
 CN Acetic acid, 2,2',2'',2'''-[[[5,11,17,23-tetrakis(1,1-dimethylethyl)-
 2,8,14,20-tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-
 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-
 tetrayl]tetrakis(oxy)]tetrakis-, tetraethyl ester, stereoisomer (9CI) (CA
 INDEX NAME)



RN 210780-04-4 HCAPLUS
 CN Acetic acid, 2,2',2'',2'''-[[[5,11,17,23-tetrakis(1,1-dimethylethyl)-
 2,8,14,20-tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-
 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-
 tetrayl]tetrakis(oxy)]tetrakis-, tetraethyl ester, stereoisomer (9CI) (CA
 INDEX NAME)

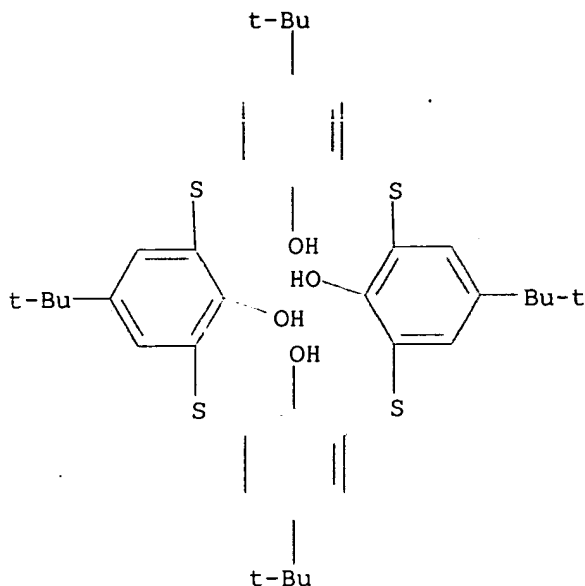


RN 210780-05-5 HCAPLUS
 CN Acetic acid, 2,2',2'',2'''-[[5,11,17,23-tetrakis(1,1-dimethylethyl)-2,8,14,20-tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacos-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrayl]tetrakis(oxy)]tetrakis-, tetraethyl ester, stereoisomer (9CI) (CA INDEX NAME)



IT 182496-55-5
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (preparation of conformational isomers of tetrakis[(ethoxycarbonyl)methoxy]tetrathiapentacyclic and their complexation properties towards alkali metal ions)
 RN 182496-55-5 HCAPLUS
 CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacos-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-

tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



- L58 ANSWER 12 OF 16 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 1998:732864 HCAPLUS
 DN 130:60263
 ED Entered STN: 19 Nov 1998
 TI **Metal** sensor of water soluble dansyl-modified thiacalix[4]arenes
 AU Narita, Miyuki; Higuchi, Yutaka; Hamada, Fumio; Kumagai, Hitoshi
 CS Department of Materials-process Engineering and Applied Chemistry for
 Environments, Faculty of Engineering and Resource Science, Akita
 University, Akita, 010-0852, Japan
 SO Tetrahedron Letters (1998), 39(47), 8687-8690
 CODEN: TELEAY; ISSN: 0040-4039
 PB Elsevier Science Ltd.
 DT Journal
 LA English
 CC 79-3 (Inorganic Analytical Chemistry)
 Section cross-reference(s): 28, 76
 AB The water soluble thiacalix[4]arene derivs., which are modified with di- and
 tri-dansyl moieties, were prepared to study their **metal** sensing
 abilities in aqueous solution It is the 1st example that water soluble
 thiacalix[4]arene derivs. can detect **metal** cations directly in
 aqueous solution by variation of fluorescence intensity upon addition of a
metal cation.
 ST **metal** detn fluorometry water soluble dansyl thiacalixarene
 IT Fluorometry
 (metal determination by fluorometry using water soluble dansyl-modified
 thiacalix[4]arenes)
 IT **Metals**, analysis
 RL: ANT (Analyte); ANST (Analytical study)
 (metal determination by fluorometry using water soluble dansyl-modified
 thiacalix[4]arenes)
 IT Metacyclophanes
 RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
 (thiacalixarene; metal determination by fluorometry using water soluble
 dansyl-modified thiacalix[4]arenes)
 IT 7429-90-5, Aluminum, analysis 7440-43-9, Cadmium, analysis
 7440-47-3, Chromium, analysis 7440-50-8, Copper,

analysis 7440-66-6, Zinc, analysis

RL: ANT (Analyte); ANST (Analytical study)

(metal determination by fluorometry using water soluble dansyl-modified
thiacalix[4]arenes)

IT 217091-31-1P 217091-32-2P

RL: ARG (Analytical reagent use); PRP (Properties); SPN (Synthetic
preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)

(metal determination by fluorometry using water soluble dansyl-modified
thiacalix[4]arenes)

IT 605-65-2, Dansyl chloride 182496-55-5

RL: RCT (Reactant); RACT (Reactant or reagent)

(metal determination by fluorometry using water soluble dansyl-modified
thiacalix[4]arenes)

RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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1991

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(9) Vicens, J; Calixarenes: A Versatile Class of Macrocyclic Compounds 1991

IT 7440-43-9, Cadmium, analysis 7440-47-3, Chromium,
analysis 7440-50-8, Copper, analysis 7440-66-6, Zinc,
analysis

RL: ANT (Analyte); ANST (Analytical study)

(metal determination by fluorometry using water soluble dansyl-modified
thiacalix[4]arenes)

RN 7440-43-9 HCAPLUS

CN Cadmium (8CI, 9CI) (CA INDEX NAME)

Cd

RN 7440-47-3 HCAPLUS

CN Chromium (8CI, 9CI) (CA INDEX NAME)

Cr

RN 7440-50-8 HCAPLUS

CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

RN 7440-66-6 HCAPLUS

CN Zinc (7CI, 8CI, 9CI) (CA INDEX NAME)

Zn

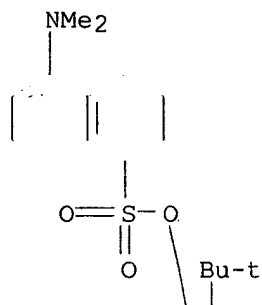
IT 217091-31-1P 217091-32-2P

RL: ARG (Analytical reagent use); PRP (Properties); SPN (Synthetic
preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)

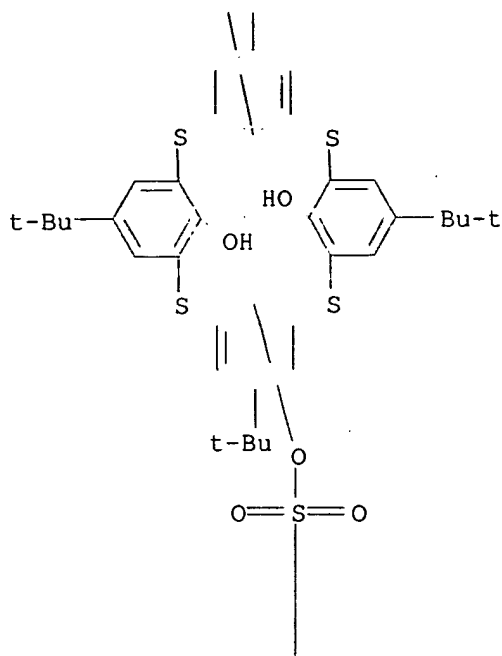
(metal determination by fluorometry using water soluble dansyl-modified

thiacalix[4]arenes)
 RN 217091-31-1 HCAPLUS
 CN 1-Naphthalenesulfonic acid, 5-(dimethylamino)-, 5,11,17,23-tetrakis(1,1-dimethylethyl)-26,28-dihydroxy-2,8,14,20-tetrathiapentacyclo[19.3.1.13,7.1 9,13.115,19]octacos-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,27-diyl ester (9CI) (CA INDEX NAME)

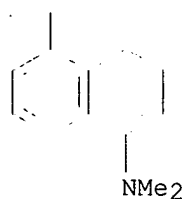
PAGE 1-A



PAGE 2-A

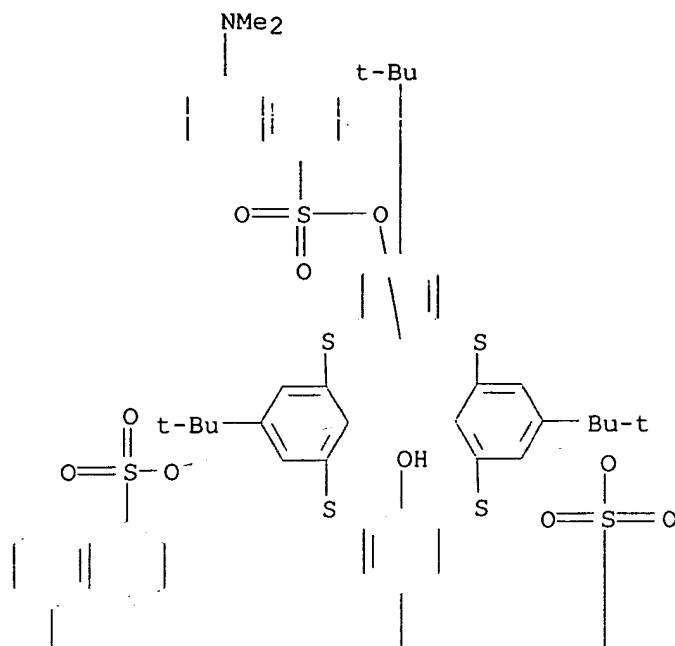


PAGE 3-A

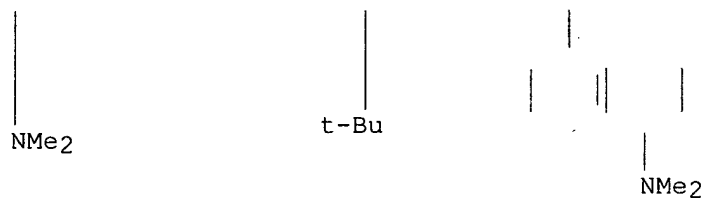


RN 217091-32-2 HCAPLUS
 CN 1-Naphthalenesulfonic acid, 5-(dimethylamino)-, 5,11,17,23-tetrakis(1,1-dimethylethyl)-28-hydroxy-2,8,14,20-tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacos-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27-triyl ester (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



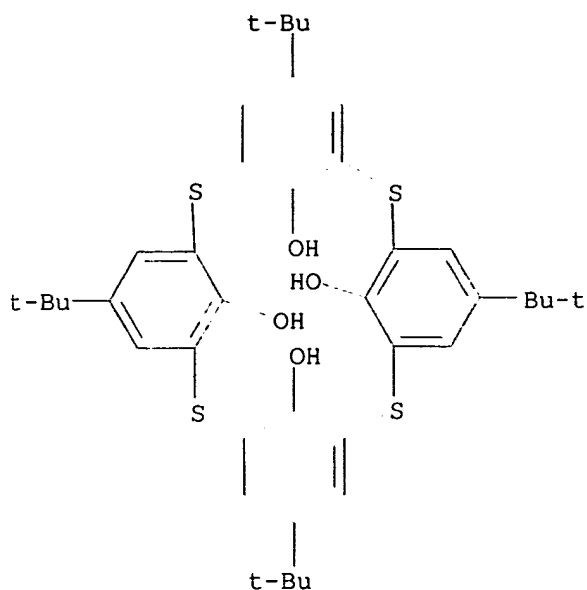
IT 182496-55-5

RL: RCT (Reactant); RACT (Reactant or reagent)

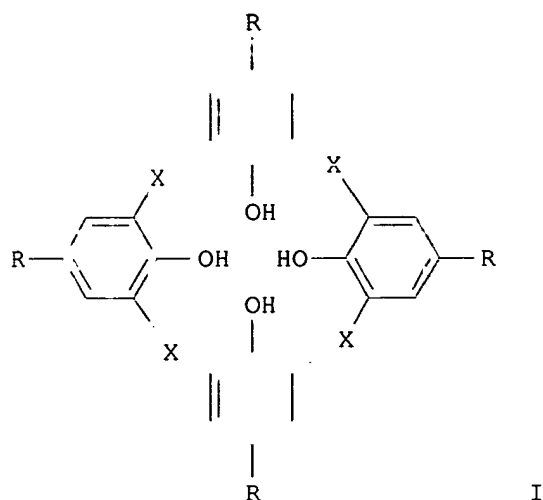
(metal determination by fluorometry using water soluble dansyl-modified thiacalix[4]arenes)

RN 182496-55-5 HCAPLUS

CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacos-
1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-
tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



L58 ANSWER 13 OF 16 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 1998:632377 HCAPLUS
 DN 129:343477
 ED Entered STN: 08 Oct 1998
 TI Selective oxidation of thiacalix[4]arenes to the sulfinyl- and
 sulfonylcalix[4]arenes and their coordination ability to **metal**
 ions
 AU Iki, Nobuhiko; Kumagai, Hitoshi; Morohashi, Naoya; Ejima, Kohki; Hasegawa,
 Mitsuharu; Miyanari, Setsuko; Miyano, Sotaro
 CS Department Biomolecular Engineering, Graduate School Engineering, Tohoku
 University, Sendai, 980-5879, Japan
 SO Tetrahedron Letters (1998), 39(41), 7559-7562
 CODEN: TELEAY; ISSN: 0040-4039
 PB Elsevier Science Ltd.
 DT Journal
 LA English
 CC 28-23 (Heterocyclic Compounds (More Than One Hetero Atom))
 Section cross-reference(s): 78, 79
 GI



- AB Thiocalix[4]arenes [I; X = S; R = tert-Bu, tert-octyl (1,1,3,3-tetramethylbutyl)], in which the four methylene bridges of calix[4]arenes are replaced by sulfide linkages, were selectively oxidized to sulfinyl- or sulfonylcalix[4]arene I (X = SO, SO₂; R = same as above) under mild conditions with control of the stoichiometry of the oxidant. Solvent extraction of the transition and alkaline earth **metal** ions with these hosts showed that the **metal** binding ability was governed by the oxidation state of the sulfur functionalities.
- ST thiocalixarene selective oxidn sulfinylcalixarene sulfonylcalixarene; alk earth **metal** ion **complexation**; transition **metal** ion **complexation**
- IT Alkaline earth **metals**
Transition **metals**, properties
RL: MSC (Miscellaneous); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(ions, solvent extraction; selective oxidation of thiocalix[4]arenes to sulfinyl- and sulfonylcalix[4]arenes and their coordination ability to **metal** ions)
- IT **Complexation**
Complexing agents
Solvent extraction
(selective oxidation of thiocalix[4]arenes to sulfinyl- and sulfonylcalix[4]arenes and their coordination ability to **metal** ions)
- IT Metacyclophanes
RL: MSC (Miscellaneous); PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)
(selective oxidation of thiocalix[4]arenes to sulfinyl- and sulfonylcalix[4]arenes and their coordination ability to **metal** ions)
- IT Oxidation
(selective; selective oxidation of thiocalix[4]arenes to sulfinyl- and sulfonylcalix[4]arenes and their coordination ability to **metal** ions)
- IT 14127-61-8, Calcium(II) ion, properties 14701-22-5, Nickel(II) ion, properties 15158-11-9, Copper(II) ion, properties 22537-22-0, Magnesium(II) ion, properties 22541-12-4, Barium(II) ion, properties 22541-53-3, Cobalt(II) ion, properties 23713-49-7, Zinc(II) ion, properties
RL: MSC (Miscellaneous); PEP (Physical, engineering or chemical process);

PRP (Properties); PROC (Process)
(selective oxidation of thiacalix[4]arenes to sulfinyl- and sulfonylcalix[4]arenes and their coordination ability to metal ions)

IT 182496-55-5P

RL: MSC (Miscellaneous); PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); RACT (Reactant or reagent)
(selective oxidation of thiacalix[4]arenes to sulfinyl- and sulfonylcalix[4]arenes and their coordination ability to metal ions)

IT 60705-62-6P 182496-64-6P 204190-47-6P
204190-49-8P 215511-22-1P

RL: MSC (Miscellaneous); PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)
(selective oxidation of thiacalix[4]arenes to sulfinyl- and sulfonylcalix[4]arenes and their coordination ability to metal ions)

IT 14127-61-8DP, Calcium(II) ion, thia-, sulfinyl- and sulfonylcalix[4]arene **complexes**, preparation
14701-22-5DP, Nickel(II) ion, thia-, sulfinyl- and sulfonylcalix[4]arene **complexes**, preparation
15158-11-9DP, Copper(II) ion, thia-, sulfinyl- and sulfonylcalix[4]arene **complexes**, preparation
22537-22-0DP, Magnesium(II) ion, thia-, sulfinyl- and sulfonylcalix[4]arene **complexes**, preparation
22541-12-4DP, Barium(II) ion, thia-, sulfinyl- and sulfonylcalix[4]arene **complexes**, preparation
22541-53-3DP, Cobalt(II) ion, thia-, sulfinyl- and sulfonylcalix[4]arene **complexes**, preparation
23713-49-7DP, Zinc(II) ion, thia-, sulfinyl- and sulfonylcalix[4]arene **complexes**, preparation
182496-55-5DP, transition metal **complexes**
182496-64-6DP, transition metal **complexes**
204190-47-6DP, transition and alkaline earth metal **complexes**
215511-22-1DP, earth metal **complexes**

RL: SPN (Synthetic preparation); PREP (Preparation)
(selective oxidation of thiacalix[4]arenes to sulfinyl- and sulfonylcalix[4]arenes and their coordination ability to metal ions)

RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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IT 14127-61-8, Calcium(II) ion, properties 14701-22-5, Nickel(II) ion, properties 15158-11-9, Copper(II) ion, properties 22537-22-0, Magnesium(II) ion, properties 22541-12-4, Barium(II) ion, properties 22541-53-3, Cobalt(II) ion, properties 23713-49-7, Zinc(II) ion, properties
RL: MSC (Miscellaneous); PEP (Physical, engineering or chemical process);

PRP (Properties); PROC (Process)
(selective oxidation of thiacalix[4]arenes to sulfinyl- and
sulfonylcalix[4]arenes and their coordination ability to metal
ions)

RN 14127-61-8 HCAPLUS

CN Calcium, ion (Ca²⁺) (8CI, 9CI) (CA INDEX NAME)

Ca²⁺

RN 14701-22-5 HCAPLUS

CN Nickel, ion (Ni²⁺) (8CI, 9CI) (CA INDEX NAME)

Ni²⁺

RN 15158-11-9 HCAPLUS

CN Copper, ion (Cu²⁺) (8CI, 9CI) (CA INDEX NAME)

Cu²⁺

RN 22537-22-0 HCAPLUS

CN Magnesium, ion (Mg²⁺) (8CI, 9CI) (CA INDEX NAME)

Mg²⁺

RN 22541-12-4 HCAPLUS

CN Barium, ion (Ba²⁺) (8CI, 9CI) (CA INDEX NAME)

Ba²⁺

RN 22541-53-3 HCAPLUS

CN Cobalt, ion (Co²⁺) (8CI, 9CI) (CA INDEX NAME)

Co²⁺

RN 23713-49-7 HCAPLUS

CN Zinc, ion (Zn²⁺) (8CI, 9CI) (CA INDEX NAME)

Zn²⁺

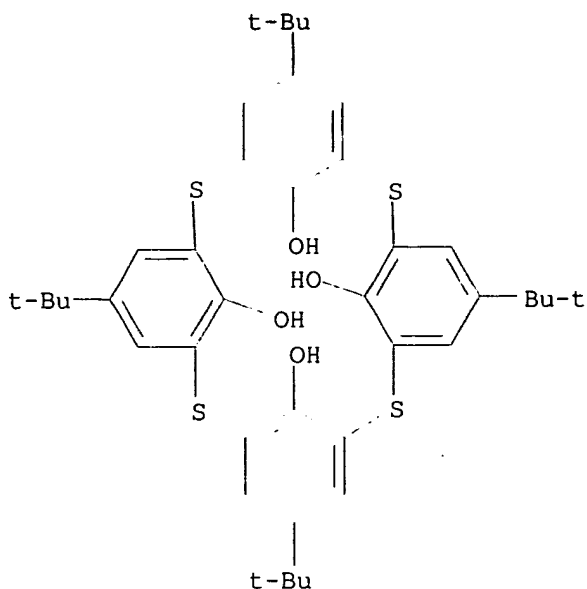
IT 182496-55-5P

RL: MSC (Miscellaneous); PEP (Physical, engineering or chemical process);
PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP
(Preparation); PROC (Process); RACT (Reactant or reagent)
(selective oxidation of thiacalix[4]arenes to sulfinyl- and
sulfonylcalix[4]arenes and their coordination ability to metal
ions)

RN 182496-55-5 HCAPLUS

CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacos-
1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-

tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



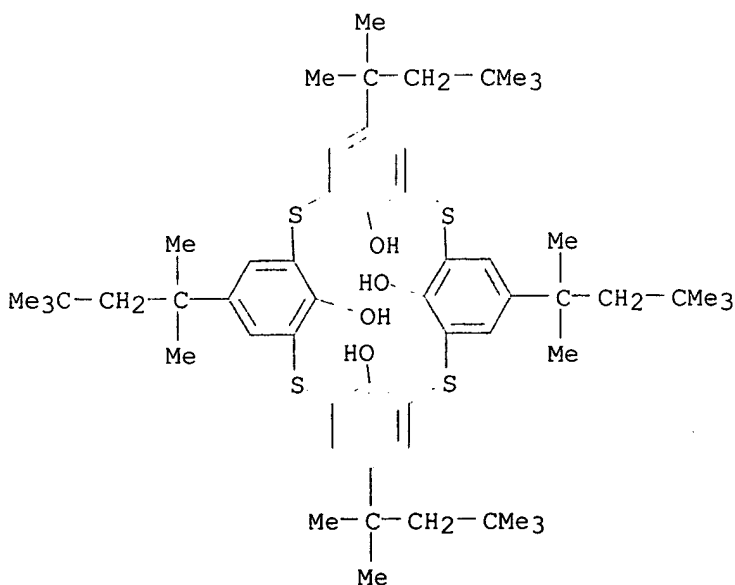
IT 182496-64-6P 204190-47-6P 204190-49-8P
215511-22-1P

RL: MSC (Miscellaneous); PEP (Physical, engineering or chemical process);
PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC
(Process)

(selective oxidation of thiacalix[4]arenes to sulfinyl- and
sulfonylcalix[4]arenes and their coordination ability to metal
ions)

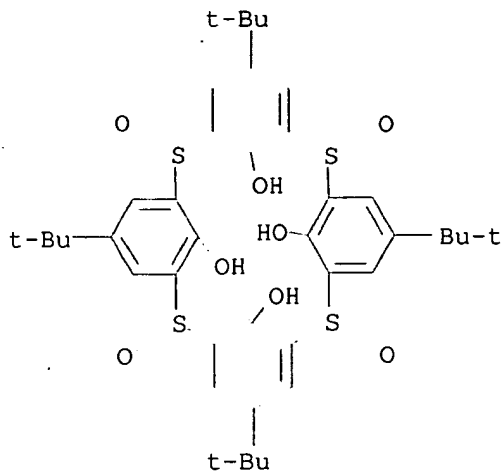
RN 182496-64-6 HCAPLUS

CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosane-
1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-
tetrol, 5,11,17,23-tetrakis(1,1,3,3-tetramethylbutyl)- (9CI) (CA INDEX
NAME)



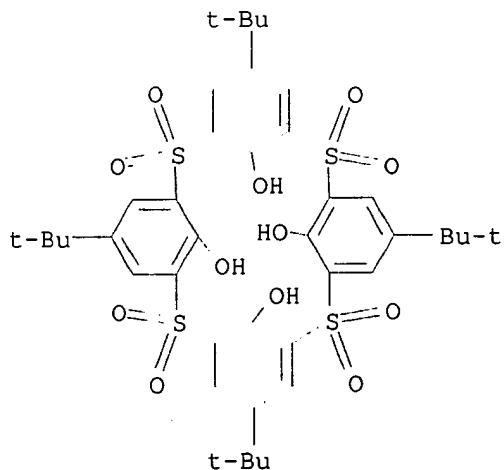
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tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)-, 2,8,14,20-tetraoxide
(9CI) (CA INDEX NAME)



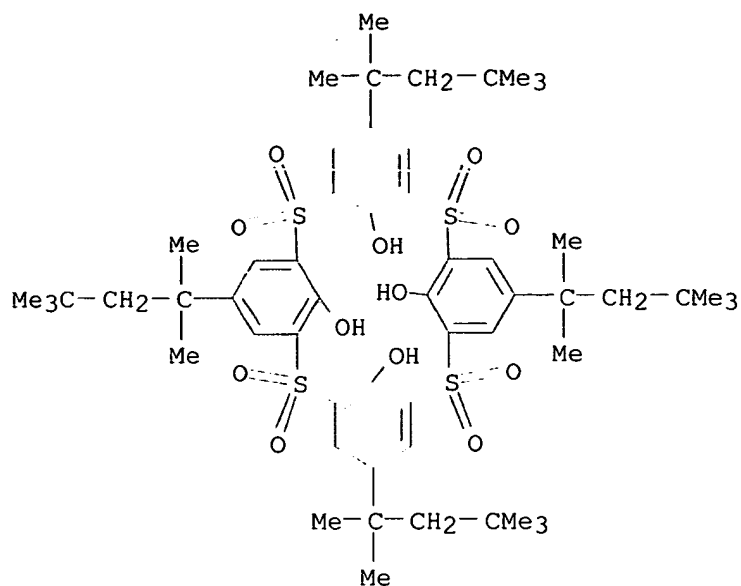
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CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacos-
1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-
tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)-, 2,2,8,8,14,14,20,20-
octaoxide (9CI) (CA INDEX NAME)



RN 215511-22-1 HCAPLUS

CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacos-
1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-
tetrol, 5,11,17,23-tetrakis(1,1,3,3-tetramethylbutyl)-, 2,2,8,8,14,14,20,20-octaoxide (9CI) (CA INDEX NAME)



- IT 14127-61-8DP, Calcium(II) ion, thia-, sulfinyl- and sulfonylcalix[4]arene **complexes**, preparation
 14701-22-5DP, Nickel(II) ion, thia-, sulfinyl- and sulfonylcalix[4]arene **complexes**, preparation
 15158-11-9DP, Copper(II) ion, thia-, sulfinyl- and sulfonylcalix[4]arene **complexes**, preparation
 22537-22-0DP, Magnesium(II) ion, thia-, sulfinyl- and sulfonylcalix[4]arene **complexes**, preparation
 22541-12-4DP, Barium(II) ion, thia-, sulfinyl- and sulfonylcalix[4]arene **complexes**, preparation
 22541-53-3DP, Cobalt(II) ion, thia-, sulfinyl- and sulfonylcalix[4]arene **complexes**, preparation
 23713-49-7DP, Zinc(II) ion, thia-, sulfinyl- and sulfonylcalix[4]arene **complexes**, preparation
 182496-55-5DP, transition metal **complexes**
 182496-64-6DP, transition metal **complexes**
 204190-47-6DP, transition and alkaline earth metal **complexes**
 215511-22-1DP, earth metal **complexes**
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (selective oxidation of thiocalix[4]arenes to sulfinyl- and sulfonylcalix[4]arenes and their coordination ability to metal ions)
 RN 14127-61-8 HCAPLUS
 CN Calcium, ion (Ca²⁺) (8CI, 9CI) (CA INDEX NAME)

Ca²⁺

- RN 14701-22-5 HCAPLUS
 CN Nickel, ion (Ni²⁺) (8CI, 9CI) (CA INDEX NAME)

Ni²⁺

- RN 15158-11-9 HCAPLUS
 CN Copper, ion (Cu²⁺) (8CI, 9CI) (CA INDEX NAME)

Cu²⁺

RN 22537-22-0 HCAPLUS
 CN Magnesium, ion (Mg²⁺) (8CI, 9CI) (CA INDEX NAME)

Mg²⁺

RN 22541-12-4 HCAPLUS
 CN Barium, ion (Ba²⁺) (8CI, 9CI) (CA INDEX NAME)

Ba²⁺

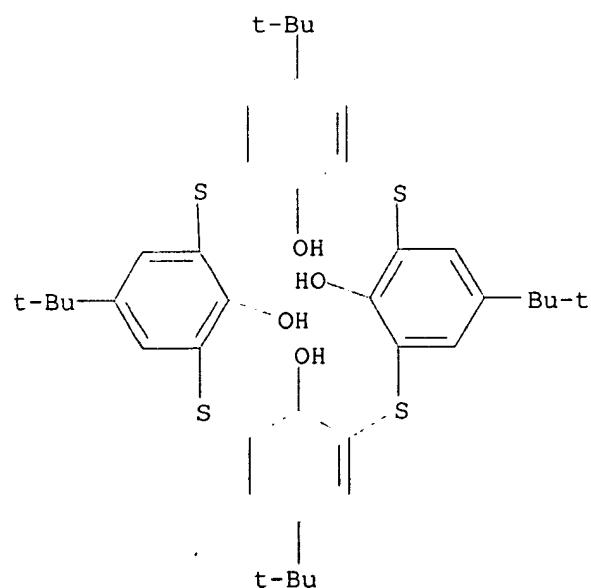
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 CN Cobalt, ion (Co²⁺) (8CI, 9CI) (CA INDEX NAME)

Co²⁺

RN 23713-49-7 HCAPLUS
 CN Zinc, ion (Zn²⁺) (8CI, 9CI) (CA INDEX NAME)

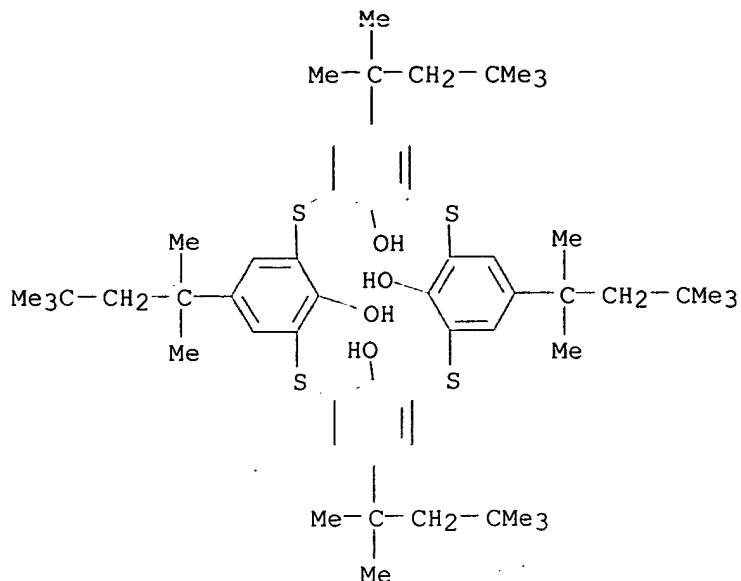
Zn²⁺

RN 182496-55-5 HCAPLUS
 CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacos-
 1(25),3,5,7(28),9,11,13(27);15,17,19(26),21,23-dodecaene-25,26,27,28-
 tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



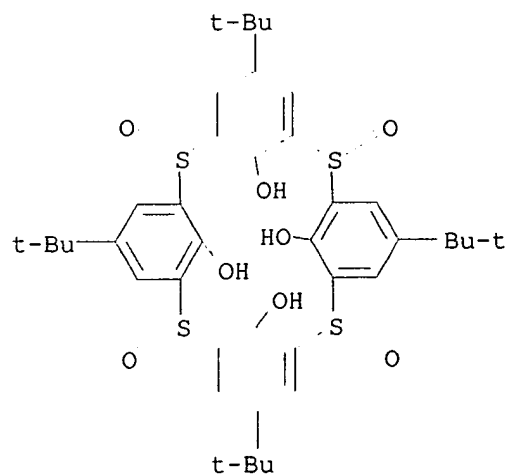
RN 182496-64-6 HCAPLUS

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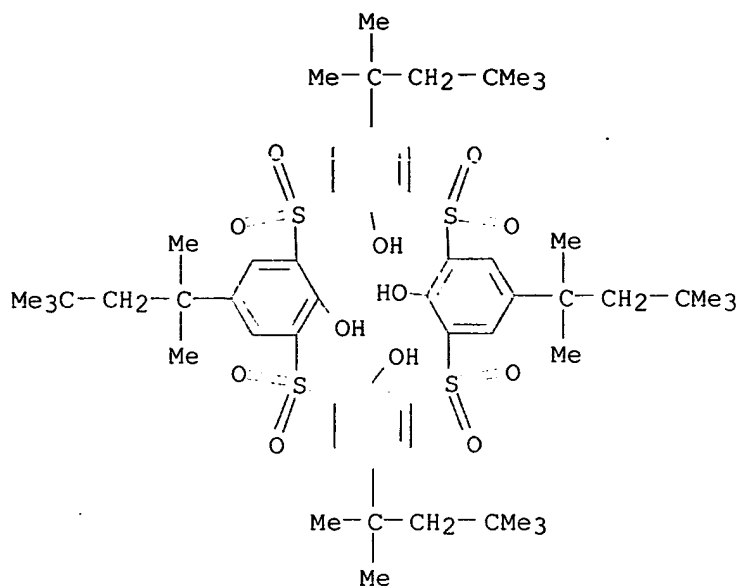
RN 204190-47-6 HCAPLUS

CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)-, 2,8,14,20-tetraoxide (9CI) (CA INDEX NAME)



RN 215511-22-1 HCAPLUS

CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1,3,3-tetramethylbutyl)-, 2,2,8,8,14,14,20,20-octaoxide (9CI) (CA INDEX NAME)



- L58 ANSWER 14 OF 16 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 1998:491579 HCAPLUS
 DN 129:236200
 ED Entered STN: 07 Aug 1998
 TI High **complexation** ability of thiocalixarene with transition **metal** ions. The effects of replacing methylene bridges of tetra(p-t-butyl)calix[4]arenetetrol by epithio groups
 AU Iki, Nobuhiko; Morohashi, Naoya; Narumi, Fumitaka; Miyano, Sotaro
 CS Department of Biomolecular Engineering, Graduate School of Engineering, Tohoku University, Aoba-ku, Sendai, 980-8579, Japan
 SO Bulletin of the Chemical Society of Japan (1998), 71(7), 1597-1603
 CODEN: BCSJA8; ISSN: 0009-2673
 PB Chemical Society of Japan
 DT Journal
 LA English
 CC 68-2 (Phase Equilibria, Chemical Equilibria, and Solutions)
 AB The ability of tetra(p-t-butyl)tetrathiocalix[4]arenetetrol (TCA, H4L), a cyclic tetramer of p-(t-butyl)phenol bridged with four epithio groups, to bind **metal** ions was investigated via a solvent extraction study. Although tetra(p-t-butyl)-calix[4]arenetetrol (CA) has very poor affinity for transition **metal** ions (M²⁺), TCA is an excellent extractant of these **metal** ions. The chemical formulas of the extracted TCA **metal complexes** were found by slope anal. to be neutral 1:1 **complexes** [MH₂L]. The origin of the high affinity of TCA for transition **metal** ions is discussed, in which it is suggested that ligation of the epithio group is important as evidenced by an NMR study of the [ZnH₂L] **complex**.
 ST thiocalixarene solvent extn **complexation** transition **metal**; epithio group thiocalixarene transition **metal** extn
 IT Conformation
 NMR (nuclear magnetic resonance)
 Solution structure
 (NMR study of solution structure of zinc-thiocalixarene **complexes**)
 IT **Complexation**
 Extractants

Functional groups

Solvent extraction

(high **complexation** ability of thiacalixarene with transition **metal** ions with regard to effects of replacing methylene bridges of tetra(p-t-butyl)calix[4]arenetetrol by epithio groups)

IT Transition **metals**, processes

RL: PEP (Physical, engineering or chemical process); PROC (Process)

(high **complexation** ability of thiacalixarene with transition **metal** ions with regard to effects of replacing methylene bridges of tetra(p-t-butyl)calix[4]arenetetrol by epithio groups)

IT **7440-66-6D**, Zinc, **complexes** with tetra(p-t-

butyl)tetrathiacalix[4]arenetetrol, properties **182496-55-5D**,

zinc **complexes**

RL: FMU (Formation, unclassified); PRP (Properties); FORM (Formation, nonpreparative)

(NMR study of solution structure of zinc-thiacalixarene **complexes**)

IT **7439-93-2**, Lithium, processes **7439-95-4**, Magnesium, processes **7439-96-5**, Manganese, processes **7440-02-0**, Nickel, processes **7440-09-7**, Potassium, processes **7440-17-7**, Rubidium, processes **7440-23-5**, Sodium, processes **7440-46-2**, Cesium, processes **7440-48-4**, Cobalt, processes **7440-50-8**, Copper, processes **7440-66-6**, Zinc, processes **182496-55-5**

RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(high **complexation** ability of thiacalixarene with transition **metal** ions with regard to effects of replacing methylene bridges of tetra(p-t-butyl)calix[4]arenetetrol by epithio groups)

RE.CNT 38 THERE ARE 38 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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IT 7440-66-6D, Zinc, **complexes** with tetra(p-t-butyl)tetrathiacalix[4]arenetetrol, properties 182496-55-5D, zinc **complexes**
 RL: FMU (Formation, unclassified); PRP (Properties); FORM (Formation, nonpreparative)
 (NMR study of solution structure of zinc-thiacalixarene **complexes**)

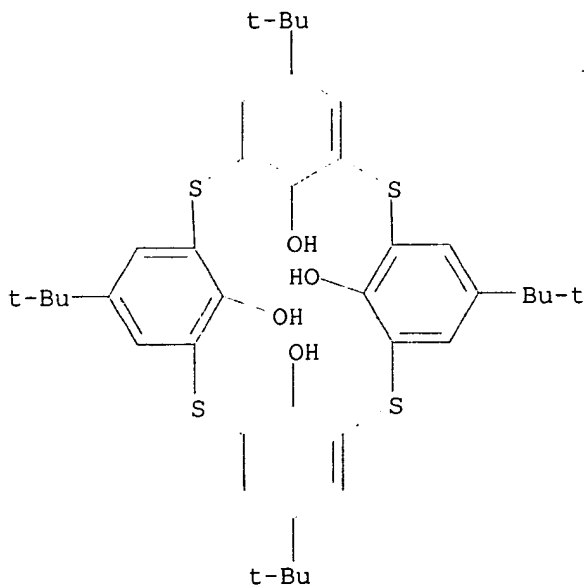
RN 7440-66-6 HCAPLUS

CN Zinc (7CI, 8CI, 9CI) (CA INDEX NAME)

Zn

RN 182496-55-5 HCAPLUS

CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosal-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



IT 7439-93-2, Lithium, processes 7439-95-4, Magnesium, processes 7439-96-5, Manganese, processes 7440-02-0, Nickel, processes 7440-09-7, Potassium, processes 7440-17-7, Rubidium, processes 7440-23-5, Sodium, processes 7440-46-2, Cesium, processes 7440-48-4, Cobalt, processes 7440-50-8, Copper, processes 7440-66-6, Zinc, processes 182496-55-5
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (high **complexation** ability of thiocalixarene with transition **metal** ions with regard to effects of replacing methylene bridges of tetra(p-t-butyl)calix[4]arenetetrol by epithio groups)

RN 7439-93-2 HCAPLUS

CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

Li

RN 7439-95-4 HCAPLUS

CN Magnesium (8CI, 9CI) (CA INDEX NAME)

Mg

RN 7439-96-5 HCAPLUS

CN Manganese (8CI, 9CI) (CA INDEX NAME)

Mn

RN 7440-02-0 HCAPLUS

CN Nickel (8CI, 9CI) (CA INDEX NAME)

Ni

RN 7440-09-7 HCAPLUS

CN Potassium (8CI, 9CI) (CA INDEX NAME)

K

RN 7440-17-7 HCAPLUS

CN Rubidium (8CI, 9CI) (CA INDEX NAME)

Rb

RN 7440-23-5 HCAPLUS

CN Sodium (8CI, 9CI) (CA INDEX NAME)

Na

RN 7440-46-2 HCAPLUS

CN Cesium (8CI, 9CI) (CA INDEX NAME)

Cs

RN 7440-48-4 HCAPLUS

CN Cobalt (8CI, 9CI) (CA INDEX NAME)

Co

RN 7440-50-8 HCAPLUS

CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

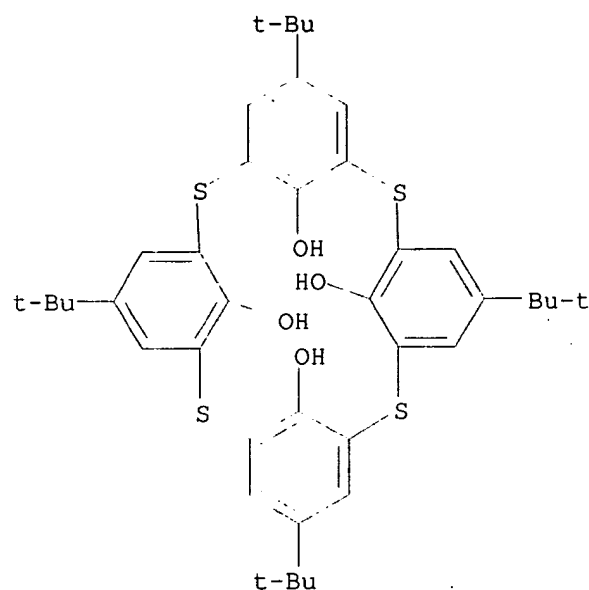
RN 7440-66-6 HCAPLUS

CN Zinc (7CI, 8CI, 9CI) (CA INDEX NAME)

Zn

RN 182496-55-5 HCAPLUS

CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosal(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



L58 ANSWER 15 OF 16 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 1998:466431 HCAPLUS

DN 129:98011

ED Entered STN: 28 Jul 1998

TI Cyclic phenol sulfides for solvent extraction of transition metals from aqueous solutions

IN Miyano, Sotaro; Iki, Mobuhiko; Narumi, Fumitaka; Morohashi, Naoya; Kumagai, Hitoshi

PA Cosmo Research Institute, Japan

SO Eur. Pat. Appl., 13 pp.

CODEN: EPXXDW

DT Patent

LA English

IC ICM C22B003-34

CC 54-3 (Extractive Metallurgy)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 851035	A1	19980701	EP 1997-122862	19971223 <--
	EP 851035	B1	20020403		

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO

US 5881358 A 19990309 US 1997-998426 19971224 <--
JP 11179104 A2 19990706 JP 1997-366037 19971224 <--

PRAI JP 1996-356340 A 19961226 <--
JP 1997-299594 A 19971017 <--

OS MARPAT 129:98011

GI For diagram(s), see printed CA Issue.

AB Transition **metal** ions in aqueous solution are extracted with an organic phase containing cyclic phenol sulfides (I; X = H, acyl carboxyalkyl, carbamoylalkyl; Z = thio, sulfinyl, sulfonyl; R = hydrocarbyl; n = 4-8). The extraction is increased by an accelerator for **complexing** the transition **metal** ions, and selected from pyridine, methylpyridine, ethylpyridine, quinoline, and tryptophan. The typical cyclic phenol as I (with X = H, Z = S, R = tert-Bu, n = 4) was dissolved in chloroform at 5 + 10-4M, and was contacted at 1:1 volume ratio with aqueous solution containing 1.0 + 10-4M of CoCl₂ stabilized at pH of 8, resulting in the Co-ion extraction of 99%. The similar results were obtained for ZnCl₂ or NiCl₂, vs. only 35% for MnCl₃.

ST transition **metal** extn cyclic phenol sulfide; cobalt ion extn cyclic phenol sulfide; nickel ion extn cyclic phenol sulfide; zinc ion extn cyclic phenol sulfide; thioether extn transition **metal** aq soln

IT Thioethers
Thioethers
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(cyclic, extraction with; cyclic phenol sulfides for solvent extraction of transition **metals** from aqueous solns.)

IT Actinides
Rare earth **metals**, preparation
Transition **metals**, preparation
RL: PUR (Purification or recovery); PREP (Preparation)
(extraction of; cyclic phenol sulfides for solvent extraction of transition **metals** from aqueous solns.)

IT **Complexing** agents
(in extraction; cyclic phenol sulfides for solvent extraction of transition **metals** from aqueous solns.)

IT 54-12-6, Tryptophan 91-22-5, Quinoline, uses 110-86-1, Pyridine, uses 1333-41-1, Methylpyridine 28631-77-8, Ethylpyridine
RL: MOA (Modifier or additive use); USES (Uses)
(**complexing** with, in extraction; cyclic phenol sulfides for solvent extraction of transition **metals** from aqueous solns.)

IT 7439-91-0P, Lanthanum, preparation 7439-94-3P, Lutetium, preparation 7440-02-0P, Nickel, preparation 7440-10-0P, Praseodymium, preparation 7440-48-4P, Cobalt, preparation 7440-50-8P, Copper, preparation 7440-53-1P, Europium, preparation 7440-54-2P, Gadolinium, preparation 7440-64-4P, Ytterbium, preparation 7440-66-6P, Zinc, preparation
RL: PUR (Purification or recovery); PREP (Preparation)
(extraction of; cyclic phenol sulfides for solvent extraction of transition **metal** ions from aqueous solns.)

IT 182496-55-5 182496-61-3 182496-64-6
204190-49-8 209472-17-3
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(extraction with; cyclic phenol sulfides for solvent extraction of transition **metals** from aqueous solns.)

RE.CNT 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Cosmo Research Institute; EP 0731102 A HCAPLUS

IT 7439-91-0P, Lanthanum, preparation 7439-94-3P, Lutetium, preparation 7440-02-0P, Nickel, preparation 7440-10-0P

, Praseodymium, preparation 7440-48-4P, Cobalt, preparation 7440-50-8P, Copper, preparation 7440-53-1P, Europium, preparation 7440-54-2P, Gadolinium, preparation 7440-64-4P, Ytterbium, preparation 7440-66-6P, Zinc, preparation

RL: PUR (Purification or recovery); PREP (Preparation)
(extraction of; cyclic phenol sulfides for solvent extraction of transition metal ions from aqueous solns.)

RN 7439-91-0 HCAPLUS
CN Lanthanum (8CI, 9CI) (CA INDEX NAME)

La

RN 7439-94-3 HCAPLUS
CN Lutetium (8CI, 9CI) (CA INDEX NAME)

Lu

RN 7440-02-0 HCAPLUS
CN Nickel (8CI, 9CI) (CA INDEX NAME)

Ni

RN 7440-10-0 HCAPLUS
CN Praseodymium (8CI, 9CI) (CA INDEX NAME)

Pr

RN 7440-48-4 HCAPLUS
CN Cobalt (8CI, 9CI) (CA INDEX NAME)

Co

RN 7440-50-8 HCAPLUS
CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

RN 7440-53-1 HCAPLUS
CN Europium (8CI, 9CI) (CA INDEX NAME)

Eu

RN 7440-54-2 HCAPLUS
CN Gadolinium (8CI, 9CI) (CA INDEX NAME)

Gd

RN 7440-64-4 HCAPLUS
CN Ytterbium (8CI, 9CI) (CA INDEX NAME)

Yb

RN 7440-66-6 HCAPLUS
CN Zinc (7CI, 8CI, 9CI) (CA INDEX NAME)

Zn

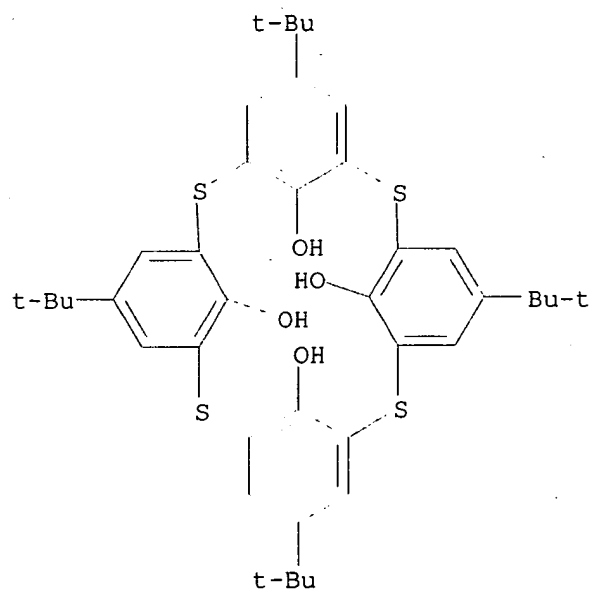
IT 182496-55-5 182496-61-3 182496-64-6
204190-49-8 209472-17-3

RL: PEP (Physical, engineering or chemical process); PROC (Process)
(extraction with; cyclic phenol sulfides for solvent extraction of
transition

metals from aqueous solns.)

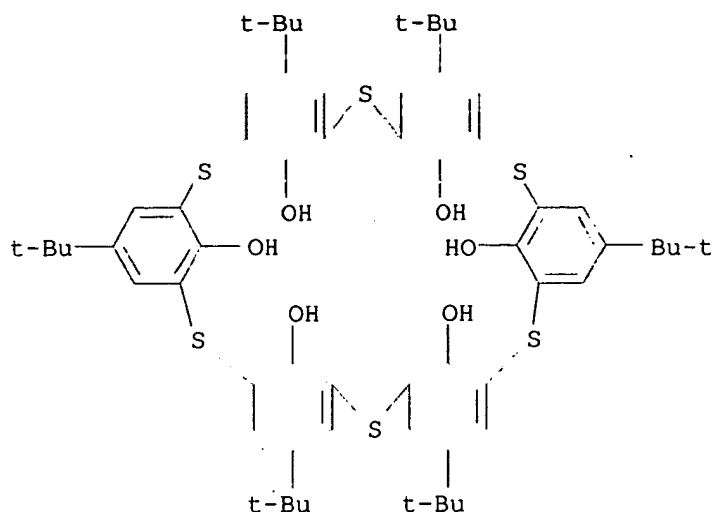
RN 182496-55-5 HCAPLUS

CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-
1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-
tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)

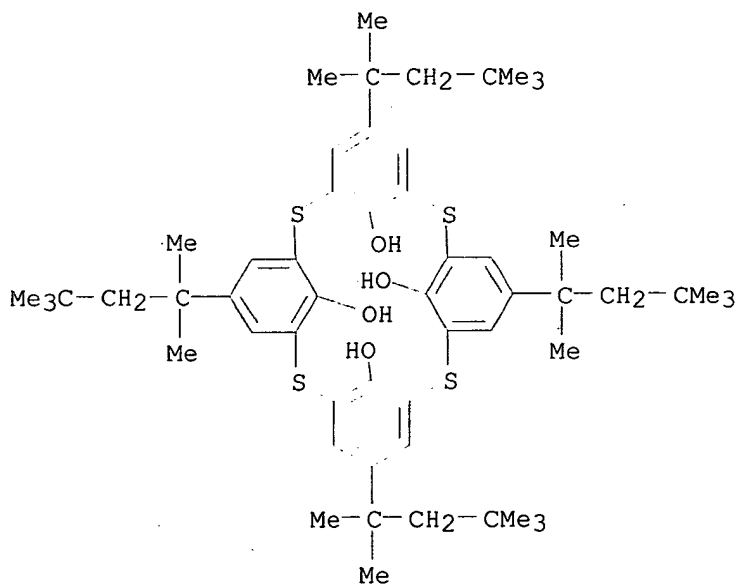


RN 182496-61-3 HCAPLUS

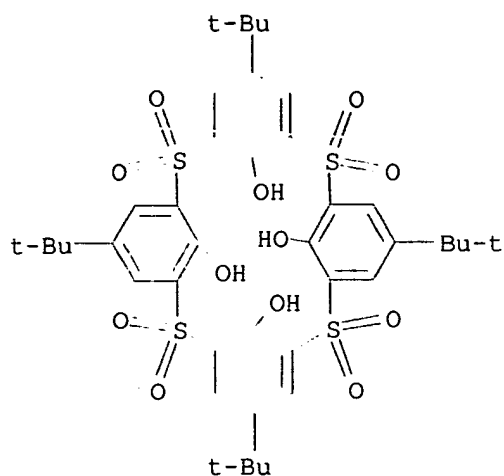
CN 2,8,14,20,26,32-Hexathiaheptacyclo[31.3.1.13,7.19,13.115,19.121,25.127,31]
dotetraconta-1(37),3,5,7(42),9,11,13(41),15,17,19(40),21,23,25(39),27,29,3
1(38),33,35-octadecaene-37,38,39,40,41,42-hexol, 5,11,17,23,29,35-
hexakis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



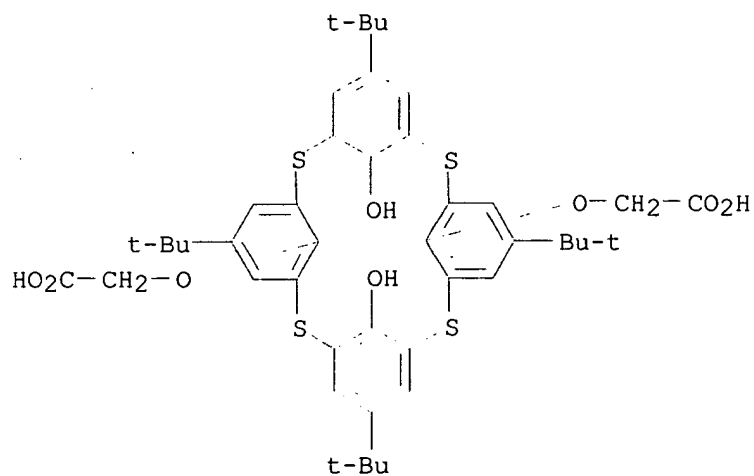
RN 182496-64-6 HCAPLUS
 CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacos-
 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-
 tetrol, 5,11,17,23-tetrakis(1,1,3,3-tetramethylbutyl)- (9CI) (CA INDEX
 NAME)



RN 204190-49-8 HCAPLUS
 CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacos-
 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-
 tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)-, 2,2,8,8,14,14,20,20-
 octaoxide (9CI) (CA INDEX NAME)



RN 209472-17-3 HCAPLUS
 CN Acetic acid, 2,2'-[[5,11,17,23-tetrakis(1,1-dimethylethyl)-26,28-dihydroxy-2,8,14,20-tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacos-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,27-diyl]bis(oxy)]bis- (9CI) (CA INDEX NAME)

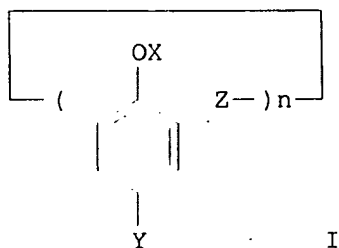


L58 ANSWER 16 OF 16 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 1998:175919 HCAPLUS
 DN 128:217390
 ED Entered STN: 25 Mar 1998
 TI Preparation of sulfonylcalixarene and sulfinylcalixarene derivatives as ion sensors
 IN Kumagai, Hitoshi; Miyanari, Setsuko; Miyano, Sotaro
 PA Cosmo Research Institute, Japan; Cosmo Oil Co., Ltd.; Kumagai, Hitoshi; Miyanari, Setsuko; Miyano, Sotaro
 SO PCT Int. Appl., 24 pp.
 CODEN: PIXXD2
 DT Patent
 LA Japanese
 IC ICM C07D341-00
 CC 28-23 (Heterocyclic Compounds (More Than One Hetero Atom))

Section cross-reference(s): 79

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9809959	A1	19980312	WO 1997-JP2789	19970808 <--
	W: JP, US				
	RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	EP 882724	A1	19981209	EP 1997-934752	19970808 <--
	EP 882724	B1	20011107		
	R: DE, FR, GB, NL				
	US 5998631	A	19991207	US 1998-68583	19980506 <--
PRAI	JP 1996-255368	A	19960906 <--		
	WO 1997-JP2789	W	19970808 <--		
OS	MARPAT 128:217390				
GI					



- AB The title compds. I [X represents a hydrogen atom, a hydrocarbon group, or an acyl group; Y represents a hydrogen atom, a hydrocarbon group, a halogenated hydrocarbon group, etc.; Z represents a group selected from the group consisting of S, a sulfinyl group, and a sulfonyl group; and n is an integer of 4 to 12, provided that a plurality of Xs or Ys may be the same or different and at least one Z of a plurality of Zs represents a sulfinyl or sulfonyl group] are prepared. Sodium ions in water were extracted into chloroform by the use of I [X = H; Y = tert-butyl; n = 4; Z = sulfonyl].
- ST sulfonylcalixarene sulfinylcalixarene prepn ion sensor
- IT Sensors
(ion; preparation of sulfonylcalixarene and sulfinylcalixarene derivs. as ion sensors)
- IT Metacyclophanes
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(preparation of sulfonylcalixarene and sulfinylcalixarene derivs. as ion sensors)
- IT 17341-25-2, Sodium ion, miscellaneous
RL: MSC (Miscellaneous)
(preparation of sulfonylcalixarene and sulfinylcalixarene derivs. as ion sensors)
- IT 98-54-4, 4-tert-Butylphenol 7697-37-2, Nitric acid, reactions
7704-34-9, Sulfur, reactions 7722-84-1, Hydrogen peroxide, reactions 7726-95-6, Bromine, reactions 7782-44-7, Oxygen, reactions 10028-15-6, Ozone, reactions 182496-55-5
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of sulfonylcalixarene and sulfinylcalixarene derivs. as ion sensors)
- IT 182496-68-0P 204190-45-4P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(preparation of sulfonylcalixarene and sulfinylcalixarene derivs. as ion sensors)

IT 204190-47-6P 204190-49-8P

RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(preparation of sulfonylcalixarene and sulfinylcalixarene derivs. as ion sensors)

RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Cosmo Research Institute; EP 731102 A1 1996 HCAPLUS

(2) Kumagai, H; Tetrahedron Letters 1997, V38(22), P3971 HCAPLUS

(3) Sone, T; Tetrahedron 1997, V38(22), P10689

IT 17341-25-2, Sodium ion, miscellaneous

RL: MSC (Miscellaneous)

(preparation of sulfonylcalixarene and sulfinylcalixarene derivs. as ion sensors)

RN 17341-25-2 HCAPLUS

CN Sodium, ion (Na1+) (8CI, 9CI) (CA INDEX NAME)

Na⁺

IT 7722-84-1, Hydrogen peroxide, reactions

182496-55-5

RL: RCT (Reactant); RACT (Reactant or reagent)

(preparation of sulfonylcalixarene and sulfinylcalixarene derivs. as ion sensors)

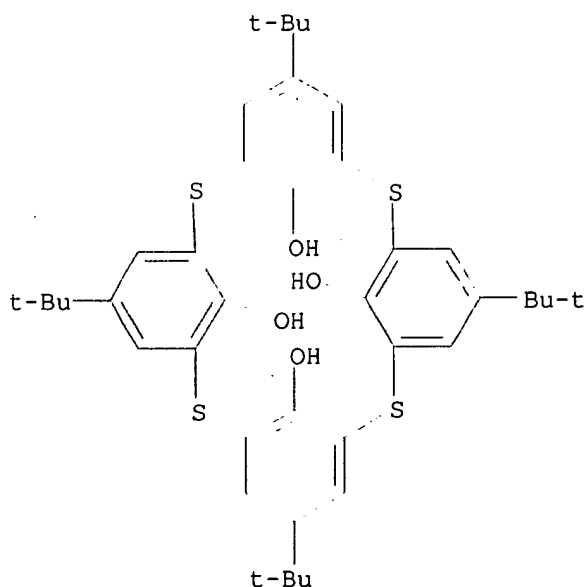
RN 7722-84-1 HCAPLUS

CN Hydrogen peroxide (H2O2) (9CI) (CA INDEX NAME)

HO-OH

RN 182496-55-5 HCAPLUS

CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosal-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



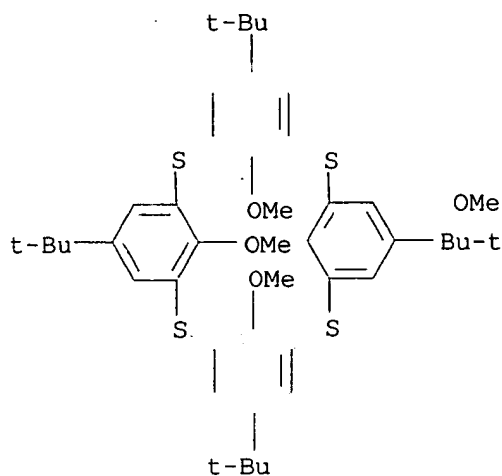
IT 182496-68-0P 204190-45-4P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(preparation of sulfonylcalixarene and sulfinylcalixarene derivs. as ion sensors)

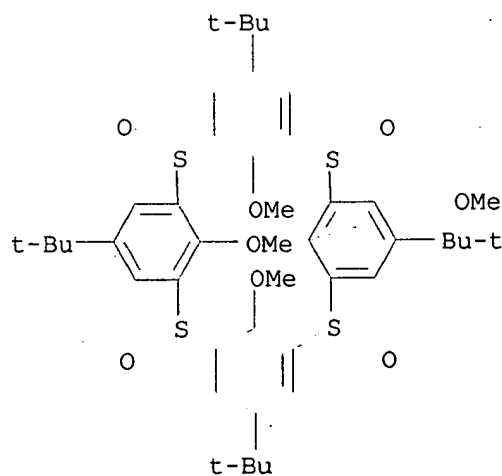
RN 182496-68-0 HCAPLUS

CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosal(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene, 5,11,17,23-tetrakis(1,1-dimethylethyl)-25,26,27,28-tetramethoxy- (9CI) (CA INDEX NAME)



RN 204190-45-4 HCAPLUS

CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosal(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene, 5,11,17,23-tetrakis(1,1-dimethylethyl)-25,26,27,28-tetramethoxy-, 2,8,14,20-tetraoxide (9CI) (CA INDEX NAME)



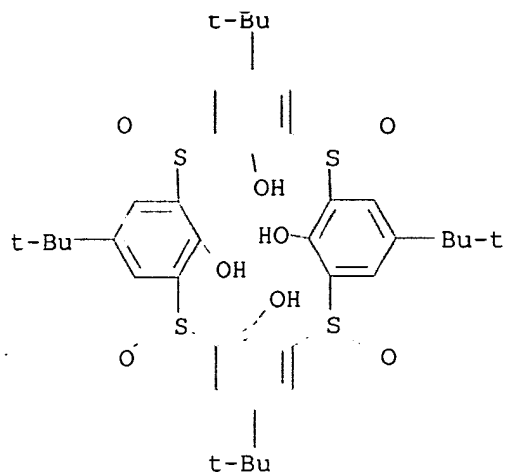
IT 204190-47-6P 204190-49-8P

RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(preparation of sulfonylcalixarene and sulfinylcalixarene derivs. as ion sensors)

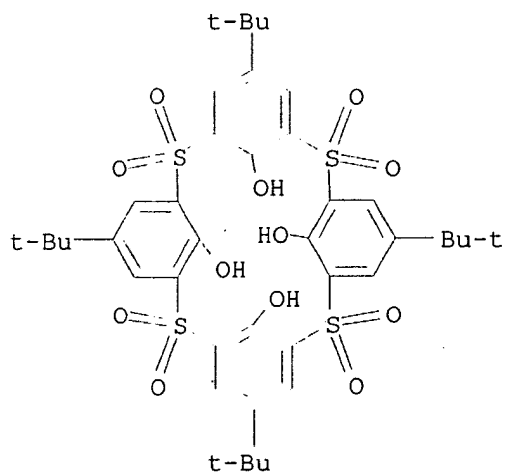
RN 204190-47-6 HCAPLUS

CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-
1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-
tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)-, 2,8,14,20-tetraoxide
(9CI) (CA INDEX NAME)



RN 204190-49-8 HCAPLUS

CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-
1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-
tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)-, 2,2,8,8,14,14,20,20-
octaoxide (9CI) (CA INDEX NAME)



=>